The Builder.

Vol. XIII.—No. 653.

IN concluding our last preceding contribution towards the Improvement of House Painters' Work,* we urged the importance to Art, of discovering a material or process, by which, whilst attaining complete durability of substance and surface, brilliancy might be avoidable. In our conception of these objects, we looked far beyond the limits of M. Chevreul's researches,—for the reason in regard to art, which was sufficiently given by reference to the advantage of fresco, as compared with oil-painting, — and in regard to durability, because all present processes, under the usual atmosphere of towns, required that early renewal which involved not only serious expense, but changes from the design of the original architect—always to be deprecated.

Hitherto the objects referred to have, we believe, not received the necessary attention, though their importance must be perceived by any who have thought much about the nature and capabilities of our art. But, the chemistry of vegetable and animal substances, to which the investigation of the properties of the oils belongs, is still in a nascent condition. There are, however, substances analogous to or produced from the oils used in painting, which might be made the subject of experiment; though the properties of which it is desired to have the benefit, are, perhaps, too much opposed to each other to be looked for in one and the same substance. They would be, in short, those of the fixed oil of linseed, and the essential oil of turpentine. A really "dead" *varnish*, colourless, and which would not require renewal, would otherwise answer all objects.

M. Chevreul seems to have had some idea of what was desired, although he has not given any particular reasons for choosing the substances upon which he makes his next experiments. The principal substance is one that he calls "*L'acide oléique hydraté*," otherwise the oleic acid, which we may state was discovered by M. Chevreul himself, and made known to the world in 1823, in his essay "*Sur les Corps gras*," which first established information as to the composition of oils and fatty substances. The acid is now abundantly produced in the manufacture of stearine candles. Till lately it was of very little value, as it burned ill in lamps. It appears not to have been obtainable except in a crude state. It is now found to be improved if agitated with dilute sulphuric acid, and other means are available by which it can be produced perfectly pure. When pure, it is a clear colourless fluid of oily consistence, inodorous and tasteless. It is distinguished by the property of rapid absorption of oxygen,—or, in other words, it dries very readily. Now, we must be careful not to attach great importance to a substance such as this, of which we ourselves certainly know but little. The oleic acid, indeed, were it to be tried in actual work, would have to be used with great caution. Taken alone, it dries too rapidly to admit of proper adherence to the surface, and very many of the mixtures, or combinations, into which it could enter are greatly deficient in this most essential quality for a pigment. Still it does seem not unworthy of notice, that other combinations have both the property of adherence, and that very advantage of which we are in search, viz. deadness of the surface. That this should be, would seem curious to many. It is stated in a little manual now before us,* issued by the Vieille-Montagne Company, that the presence of acids in fatty substances will lead invariably to bad results, in the case of the pigments with which they are used. This, however, probably refers to the ordinary acids with which oils are clarified,—not to the organic acids.—When a quantity of the oleic acid is exposed, it has been noticed that a brown substance is produced, and that there is a disagreeable rancid smell, and such points would, of course, have to be taken into account. The acid also is said to decompose the carbonates,—though, as will be seen, M. Chevreul notes experiments on the acid mixed with carbonates, and he does not allude to such decomposition. This branch of the subject, however, is one which would deserve the extended research of an accomplished chemist like M. Chevreul. It only appears to us that considering the large quantities of the acid which must be produced in London, a case is made out for further investigation. What our author has done, forms a good opening, — even if his statements do not seem quite free from contradictions.

He mixes the acid with sundry lead, zinc, and antimony bases, and the results in the case of applied coats of paint are stated. First, as to lead. The compound of the acid and litharge adhered at once to the surface. Where the white of lead was substituted, forty-eight hours elapsed; but then, the coating began to harden. The experiments as to minium and chromate of lead, respectively, do not appear to have given satisfactory results. Next, as to zinc. The compound of the acid and anhydrous oxide of zinc, adhered at once. Nearly the same effect was noticed with the carbonate of zinc. The experiment on the simple chromate of zinc was not satisfactory; but the acid with the product obtained by boiling the bi-chromate of potash with oxide of zinc, adhered at once. In the case of the "Vert de Rinman" (oxide of zinc and oxide of cobalt), the coating adhered, though not immediately.

Passing over experiments with antimony and acetate of lead, we arrive at some made with litharge, white of lead, and white of zinc respectively, where the acid pure, or mixed with linseed oil, was used in place of the ordinary oil. In the experiments tried in the spring of 1849, on surfaces of oak, we have the acid and five different combinations of it, contrasted as to results, with a combination of linseed oil and litharge. M. Chevreul makes no allusion to the anti-siccative properties of the oak. By these, some of the contradictions we have referred to might have been shown to be only apparent. The several liquids and mixtures, with their results, are as under; it being understood that the acid is, in in all cases, in the hydrated form:—

1. *Oleic acid.*—First coat absorbed by the wood, but that and the later coats would not dry.
2. *Oleic acid and white of lead.*—The second coat defective as to adherence; but the third very adherent. Dried "dead."
3. *Oleic acid and litharge.*—First coat set in six hours; second coat in about two days; third coat in about six hours. Perfect as to adherence. Dried dead. (Still M. Chevreul notices that the surface, though rough, was greasy to the touch; this he attributes to oleic acid in excess, and to the oleate of lead formed.)
4. *Oleic acid and white of zinc.*—Dried quickly; but not so readily as the last. Second and third coats defective as to adherence. Dried dead.
5. *Oleic acid, linseed oil, and white of lead.*—Dried quickly; but second and third coats defective as to adherence. Dried dead.
6. *Oleic acid, linseed oil, and white of zinc.*—Same as the last.

Whilst in the case of—

7. *Linseed oil and litharge.*—First coat set in three days; second coat in two days; third coat dry in twenty-four hours. When perfectly dry, the surface shining. Second and third coats very adherent to the wood.

Out of the above list, it appears to be M. Chevreul's opinion that besides No. 7, Nos. 2 and 3 might be safely used; but he says that those are the only mixtures so available, since they afford the only instances where the mixtures will dry and also adhere. Remarking that the last mixture (7) is the only one that dries with a shining surface, the reason is given thus:—In all the *others*, solidification operates more or less rapidly between the ingredients—whereof one is liquid, and the other solid—the particles taking up their places without regularity, or in the positions they happened to fall into; but in No. 7, the absorption of oxygen being produced by a liquid body, and being by consequence slow, greater homogeneity results; the solidified oil, whether it have affinity for white or not, reflecting the light in a more regular manner. Finding the rapidity with which the acid with litharge or white of zinc became solidified, he considered whether advantage might be derived from this in practice; but the result was not satisfactory: the solidification proved to be too rapid; therefore he added to the acid both linseed oil and turpentine. In June, 1849, he laid on two deal doors the mixtures as under:—

No. 1.—Oleic acid, 2 parts by measure.
Linseed oil, 1 „
Turpentine, 1 „
Manganesed oil, 0½ „
And white of zinc.

No. 2.—Linseed oil, 4 parts by measure.
Manganesed oil, 0½ „
Turpentine, 1 „
And white of zinc.

As to drying, the effects were precisely similar in both cases, the first coats being dry in two days, and the second coats in one day. In regard to appearance, there was some difference, No. 1 being "dead," as compared with No. 2. This result, however, was obtained at a serious disadvantage, No. 1 having the capital defect of want of adherence to the wood. We should at once admit that no practical conclusion has been got to, in regard to the use of the oleic acid; indeed, what has been just stated will show how much caution would be necessary before using it in the manner in which M. Chevreul, before undertaking the experiments, seems to have supposed it might be useful. But, with such properties as it has, and considering the large quantities of it which no doubt may be obtained at Vauxhall, it must be well worth the while of English chemists to continue the French researches. The result, at all events, might give us what we seek, from properties of some of the other organic acids, or bases, of which the oils are composed. There are also important differences in the several kinds of oils. The linseed oil is said to contain an acid of its own, which has been called linoleic acid, and, as obtained, has much mucillagineous impurity. Walnut oil is remarkable for a siccative property, superior to that of linseed oil, and its want of colour renders it a good vehicle for many kinds of paints. Hempseed oil is also in use. There is, consequently, a field for research considerably more extended than the area of the present researches. Our own abstract of these has now included nearly everything that we can expect will receive attention from practical house-painters.

* See page 337, continued from pp. 109, 193, 243, *ante*.

* Manuel des Peintures au Blanc de Zinc; ou, Conseils aux Peintres en Batiments sur l'Emploi et les Avantages des Peintures au Base de Zinc. Paris: 1854.

The tables completing the series of experiments on oleic acid are too extended to be given entire, and chemists who would pursue the investigation, would do well not to be satisfied with any abstract. The subsequent experiments, indeed, appear to us of less immediate moment, since the material on which the coats of paint are laid, namely, oak, is still not in that place alluded to by M. Chevreul, as possessed of anti-siccative, and other properties, which might go far to modify some of the results. We may, however, say that he found on mixing the acid, or the acid and linseed oil, or acid, oil, and turpentine, in various proportions with ochres, or other colouring substances, without the ordinary lead, or zinc base, all were soft, and not adherent to the wood. In the following case, however:—

Oleic acid	2 parts
Linseed oil	1 ,,
Turpentine	1 ,,
And white of lead,	

though the first coat required eighteen days to be absolutely dry, the second coat requiring four days, the coating was ultimately hard, and very adherent. The white of zinc was not tried in those experiments. The reason why the particular combination above given, is the only one that will solidify, and at the same time adhere to the wood, our author says, is involved in the following:—First, the acid is capable of "a sort of combination" with the white of lead, though the product is not to be confounded with an oleate of lead; and, second, there is the property of drying slowly, which resides in the linseed oil.

In the last series of experiments, in the spring of 1849, several different oils and vehicles were tried on oak, with sundry bases and colouring substances. First, linseed oil and manganesed oil, were each mixed with umber, and in all cases the three coats dried in eight days, the adherence, however, being but middling. The oleic acid with umber was, indeed, imbibed, but remained sticky, and without adherence. Next, the acid was tried with an addition of one-fourth of turpentine, with oxide of zinc, red oxide of iron and yellow ochre. The three coats again required eight days, when they were perfectly dry, and with a dead surface, but the adherence was but middling. The acid, with the manganesed oil, "noir de charbon," and yellow ochre would not dry; whilst using the same colouring substances, and substituting linseed oil and litharged oil for the other ingredients, the three coats required seven days, when they dried, with a slightly shining surface, the adherence, however, being but middling. In the next case, litharged oil and manganesed oil were each treated with ivory-black, and those two compounds were mixed; and in that case the adherence was great, the surface being shining.—Two different mixtures were then prepared, and compared with each other. They were the following:—

A.		B.	
Linseed oil	2 parts.	Oleic acid	2 parts.
Turpentine	1 ,,	Linseed oil	1 ,,
Manganesed oil	0½ ,,	Turpentine	1 ,,
		Manganesed oil	0½ ,,

Three coats of each of these, mixed with whatever substances, dried in six days. With the chromate of zinc and Prussian blue, the adherence was satisfactory in the case of A and B. But whilst A dried with a brilliant surface, that of B was dead (*mâte tendre*). As regards the same vehicles with red ochre and "charbon" in place of the chromate and blue, A was brilliant and adherent; whilst the surface of B seems to have varied in the experiments—its adherence being slight. Substituting white of zinc, red ochre, yellow ochre, and umber, A was brilliant and adherent, whilst B was dead, with feeble adherence. Next, with white of zinc, chromate of zinc, and vermillion, the contrast between A and B was similar,—as also where there was white of zinc and Prussian blue, or white of zinc, blue, and vermillion. Thus it is seen, first, that all the mixtures where the acid exists in a state of purity or mixed with linseed oil, when laid on are dead, and on coming to the solid state have little adherence; secondly, were it desired to have the surface brilliant as well as adherent, a siccative oil (for example, linseed oil), should be present in such a proportion that the particles of the oil in absorbing oxygen should not be too far removed from one another by the interposition of the solid and opaque matter with which they are incorporated.

When oleic acid is mixed with oxides capable of solidifying it, the acid passing almost instantly to the solid state, can present no uniformity in the mass of particles of the oleate produced. The case is different with a siccative oil passing progressively to the solid state by the absorption of oxygen. The slowness of the change permits the oily particles to take a symmetrical arrangement which would render them transparent, did they not include amongst them opaque particles. If the latter do not predominate, the arrangement is such that the surface of the dry oil reflects light.

Such is the *rationale* of the subject, according to M. Chevreul, and it must be allowed that, together with the experiments, they do not leave our object of attaining a durable and dead surface in a highly satisfactory position, though in one which seems far from conclusive against us. We rather think that these researches give a better starting-point for the pursuit of the subject, than had before existed.

With the investigation into the influence of the physical properties of wood, in the second memoir, yet unpublished, the knowledge of the circumstances attending the drying will be complete. It is clear that vast improvements might be made in the execution of work, if painters would apply the information above afforded them in regard to the composition of the ordinary "driers," and those other siccatives by which it has been shown, in numerous cases they might be advantageously replaced. As it is, even in large establishments, no attention is given to the subject, and any kind of "patent drier," wherein the extensive adulteration is the only thing *patent*, is thought to answer the purpose. Whilst, however, these researches show that there may be considerable improvements, commercially considered, in the ordinary "driers," they show also that slight changes in the materials and proportions of pigments may lead to very important results. If such improvements result from the consideration which we venture to say, the particulars we have given well deserve, our general readers will have no reason to regret that we have occupied our pages with matter of such moment in regard to the comfort, and durability of their dwellings, as well as to the interests of art.

We take this opportunity to say that a former article, noticed by a correspondent in our last number, seems not inconsistent with the experience as to the mode of using zinc paint. M. Chevreul's researches were as to painters' work in general. We referred to the mistake made in the mixture of a very large proportion of oil with the white of zinc; and the admixture of turpentine seems to have a possible advantage, or one beyond what it has with a lead base, which tendency, however, where the quantity of turpentine is further increased, brings with it the very disadvantages, resulting from excess of turpentine in the case of white of lead. We have refrained in the present state of the inquiry from expressing any opinion as to the white of zinc; but the use which has been made of it in other countries leads us to take great interest in the question of its advantages; and we may at least say it is clear to us, that the applications of it in England have been made under great ignorance of the best understood methods of using it, and have given it no fair chance of success.

ACCOUNT OF THE EXPENSES OF A JOURNEY TO PARIS AND BACK, INCLUDING A DETENTION AT LILLE.

The following account of the expenses of a short trip to Paris during last July may interest such of your readers, especially those of moderate means, who contemplate visiting that city. It is a *bonâ fide* copy of the entries made in my pocket-book each day, and I have inserted every item that I find there.

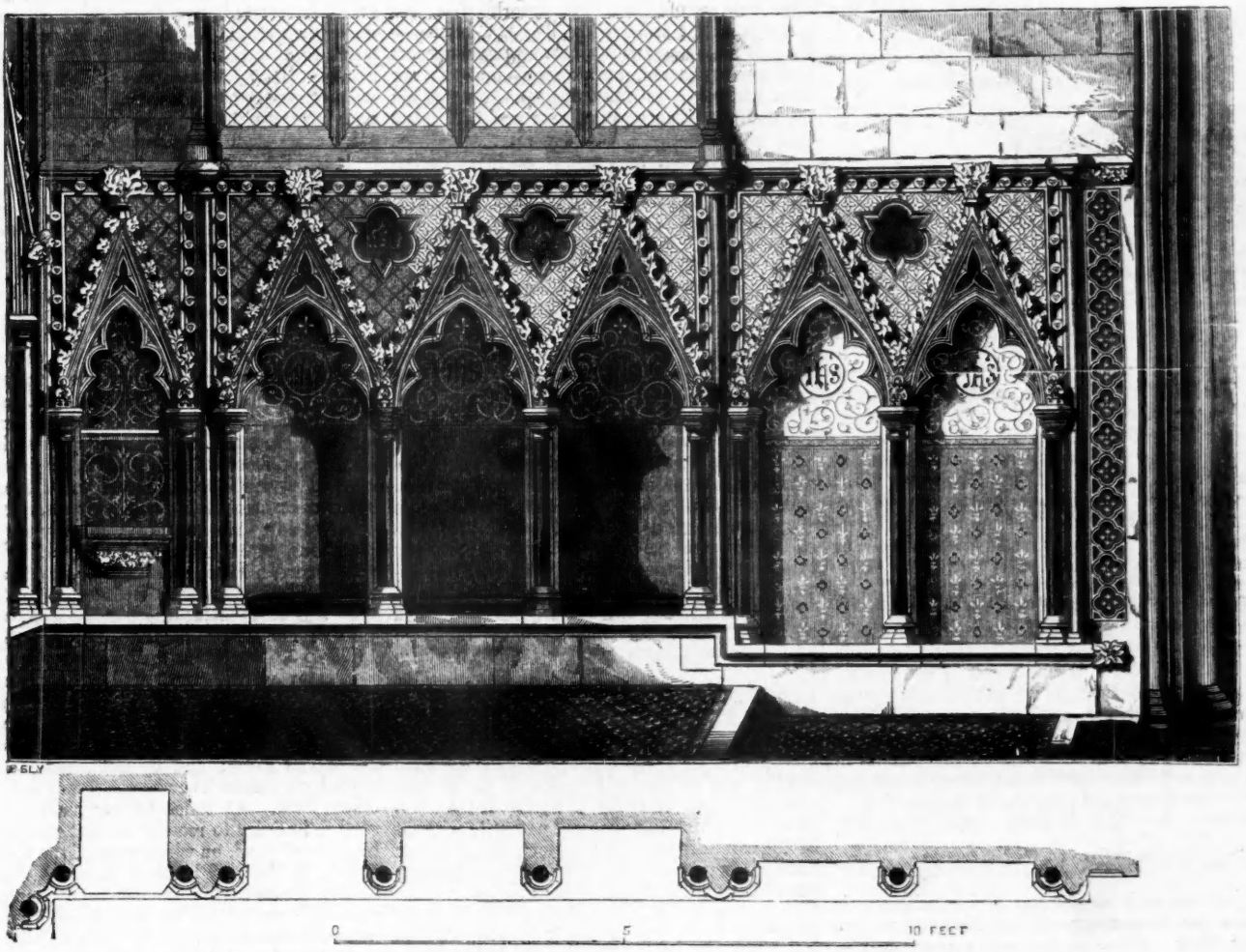
I add also a few notes and suggestions, which will, perhaps, be of some use to those who are unacquainted with Parisian life and customs, premising that I am a *poor* gentleman, that is, an artist, and that my notes are intended for that class:—

Date. July.		French Fr. c.	English £. s. d.
1.	Steamboat and rail to Lille	15 0	0 12 0
	Breakfast and steward's fee, &c.	3 75	0 3 0
	Dinner at Dunkirk	3 25	0 2 7
	Porterage and small sums	1 75	0 1 5
	Commissionnaire at Lille	0 50	0 0 5
2.	Hôtel de l'Europe, at Lille	7 0	0 5 7
	Soap, porter, 'bus to rail, &c.	2 0	0 1 7
	Rail from Lille to Paris (express)	28 0	1 2 4½
	Small sums and postage	1 30	0 1 0½
	Refreshment on rail	1 50	0 1 2½
	'Bus to la Bourse	0 30	0 0 3
	Dinner (in the Passage Choiseul)	1 70	0 1 4½
	Four set squares (1 sou each!)	0 20	0 0 2
	Cirque de l'Impératrice	1 0	0 0 9½
	Café Chantant	1 60	0 1 3½
	Timbres-postes (postage-stamps)	1 0	0 0 9½
	Small sums	0 75	0 0 7½
3.	Breakfast	1 35	0 1 1
	Great Exhibition	1 0	0 0 9½
	Dinner	1 50	0 1 2½
	Small sums	1 0	0 0 9½
4.	Breakfast, 2f.25c.; dinner, 1f.70c.	3 95	0 3 2
	Small sums	1 0	0 0 9½
5.	Fine Arts Exhibition	1 0	0 0 9½
	Catalogue of ditto	2 50	0 2 0
	Breakfast, 1 25; dinner, 1 70	2 75	0 2 2½
	Postage, 1 60; small sums, 70	2 30	0 1 10
6.	Breakfast, 3 20; dinner, 2 10	5 30	0 4 3
	Catalogue, Musée de l'Hôtel Cluny	2 0	0 1 7
	Theatre, 2; small sums, 1 75	3 75	0 3 0
7.	Breakfast, 1 50; dinner, 2	3 50	0 2 9½
	St. Denis, 1 10; expenses there, 1 40	2 50	0 2 0
	Café, 1 50; 'buses, 60	2 10	0 1 8
	Gloves, 14; kepi (cap) 5	19 0	0 15 2½
8.	Breakfast, 3 15; dinner, 2 60	5 75	0 4 7½
	Versailles and back	2 94	0 2 4
	Expenses there, 1 45; small sums, 1	2 45	0 1 11½
9.	Breakfast, 1 35; dinner, 2	3 35	0 2 8½
	Exhibition	1 0	0 0 9½
	Bonbons, 2; 'bus, 30	2 30	0 1 10
10.	Breakfast, 1 35; dinner, 2 15	3 50	0 2 9½
	Eau de Cologne, 2; concierge, 1	3 0	0 2 5
	Small sums, 40; indicateur, 25	0 65	0 0 6½
	Bill for eight days' lodging and service	27 60	1 2 1
	Cab to railway	2 0	0 1 7
	Railway and steamer to London, *viâ* Dieppe, saloon and second-class	28 75	1 3 0
	Geneviève, 1; Journal pour Rire, 50	1 50	0 1 4½
	Refreshment at Rouen	1 50	0 1 2½
	'Bus at Dieppe, 50; Permis d'embarquement, 10	0 60	0 0 6
	Loss by change to English money at Dieppe, and small thefts	1 75	0 1 5
11.	Expenses on board, and steward's fee	1 85	0 1 6
	Black mud at Newhaven, sold as coffee	0 85	0 0 8
	Error in excess, from reckoning the sou as equal to ½d. ·95 of a halfpenny being nearer the tenth	218 40	8 14 11
			0 0 2
			8 14 9
	Journey to Paris, including expenses at Lille		2 11 5½
	Eight days' expenses at Paris		4 12 2½
	Journey to London		1 11 1
	Total		8 14 9

NOTES FOR STRANGERS IN PARIS.

A stranger arriving in Paris, if he purposes staying more than a couple of days, and desires to economise, will do well to take a lodging rather than stay at an hotel. In Paris are a great number of *maisons meublées*, or houses let off in single rooms, or suites of apartments. Several of them will be found in the Rue Neuve S. Augustin, near the Rue de la Paix, as the Maison de Goest, No. 46; Hôtel d'Orient, No. 48; Hôtel d'Amirauté, Maison d'Alma. The situation is central and convenient, as Pat says, to the principal places of resort. A single room to serve as bed and sitting room, may be had from about (at present) 3 francs a day, to 5 francs or more: an *appartement*, or suite of two or more rooms, of course, will be charged higher. A traveller should take soap with him: it is seldom to be found in the hotels in France. On arriving in Paris in the afternoon from Lille, I took a 'bus to La Bourse, and walked thence to the Maison de Goest, 46, Rue Neuve S. Augustin (I had been there before), carrying my small travelling-bag myself, and in five minutes I had engaged a room, and had a supply of hot water to assist in removing the dust I had gathered on the road. I was certainly lodged nearer heaven than I ever was before, viz. *au cinquième*, but there was the "*mansarde*" above me, and I had every accommodation I wanted.

During my stay I dined usually at one restaurant, "Courrieux, au Grand Gastronome," in the Passage Choiseul (where a very good



SEDILIA, &c. CHURCH OF ST. MARY MAGDALEN, MUNSTER-SQUARE, LONDON.

dinner is given for 1 franc 60 centimes, plus 2 sous to the *garcon*), and seldom before seven or eight o'clock, when my day's work or pleasure was over. I breakfasted where I happened to be at ten o'clock — sometimes cheaply, but oftener the reverse; and I found these two meals sufficient except as regards thirst; but cool beverages are plentiful in Paris, and I was not too proud to step into a wine-shop, and get two sous of wine, which, mixed with a demi-siphon of eau de Seltz, is a most refreshing drink. I did not visit any of the great restaurants, as the Restaurant de l'Europe, the Diner de Paris, as I came to Paris for an intellectual feast, and not for bodily indulgence, and besides, had no money to spare. A traveller will save himself much trouble if he can stow all his baggage in one parcel, and that not larger than he can carry with ease: a few shirts, abundance of socks, a pair of shoes, and change of clothes, are all he requires for a week or ten days. He need not even take his shaving tackle, for I noticed all the English in Paris had left off shaving on landing in France, and you could tell how long since they had left home by the length of their beards. If he purposes making a longer stay, he can easily get his linen washed—even day by day. No sensible person would attempt to smuggle anything over either way: a pint of French brandy is allowed on landing in England, and it would be difficult to pass more without detection, and half a dozen of French gloves will not be taken unless *concealed*.

A person tolerably conversant with French is liable to a few errors, which make one look small: *e.g.* at a café, for instance, do not call for *du café*, or *de la groseille*, but *un café—une groseille*. Also after dining, do not ask for *mon billet*, but *mon addition*. There is also this distinction between a café and a restaurant—the first is a place for drinking, the second for eating. As regards lodgings, all the notices for *furnished* apartments, are on *yellow* paper, those for *un*furnished apartments on *white*—*un appartement* is a suite of rooms—*une chambre* is one room. "Voitures de Place," are the cabs with big red numbers on the back—they are found on stands. "Voitures de Remise," have small red numbers, and drivers in livery,—indeed are stylish-looking affairs, but dearer, 1fr. 75c. par course, the others 1fr. 25c.

At the theatres you keep your place by tying a handkerchief round your seat: no one will take either in your absence. D. W. R.

SEDILIA, ST. MARY'S, MUNSTER-SQUARE.

The accompanying engraving shows more in detail the sedilia, &c. in the church of St. Mary Magdalen, Munster-square, built under the direction of the late Mr. Carpenter, and illustrated in a recent number of the *Builder*.* The carving was executed by Purday, the polychrome by Messrs. Crace. The material is Caen stone, with shafts and panels of St. Ann's marble.

SOME MEMORIALS OF FATHER THAMES.

"The Thames," says a historian who wrote in 1794, "refreshes with its gentle waves the seats of learning, the palaces of kings, connects the commerce of the provinces which it adorns with the metropolis which it dignifies, and rolling on, with each returning tide, through those superb arches which unite its opposite shores, connects the commerce of the metropolis with that of the world, and continuing its course through the vast operations of trade on its banks, and by the royal arsenals, the manufactories of that strength which forms the national defence and protection, it expands at length, till, itself a sea, it mingles with the ocean." Old Father Thames was then a glorious fellow—stronger than he is now, and in comparatively decent condition. The Lord Mayor could then take his barge, and with pleasure and safety entrust himself for three or four days in his bracing atmosphere, not forgetting, in the midst of enjoyment, to cast an eye to abuses, and to listen as to necessary improvements, ordering the destruction of weirs and other obstructions. Things are changed now—more's the pity: we will not, however, pause at present to grumble, but wander to where we can enjoy the wholesome air, see the fresh green hawthorn bushes, where the "Birdesses," as Chaucer says, "singge clear," and stand beside that which is to us an inexhaustible subject for thought and enjoyment—the spring of a famous river.

Old Father Thames, like many men of great name, and nations of high renown, is traced to a humble source — a picturesque little valley near Cirencester, in the county of Gloucester. It presently joins three or four neighbouring rills, and many a tributary stream forms the chief of British rivers, which for several miles preserves a rivuletish appearance. It reaches Cricklade, in Wiltshire, where, being increased, it assumes a more important appearance. Approaching Kemsford, it re-enters its native county, dividing it from Berkshire, at Inglesham. The river enlarges as it approaches Lechlade, in Gloucestershire, situated on the confines of Berkshire and Oxfordshire, and receiving the waters of the Colm, it becomes capable of carrying vessels of from eighty to ninety tons burthen.

We must not, however, pass on without noticing the finger which Father Thames has thrown out to rapid Severn. This was an important junction, which, although contemplated as long ago as the reign of Charles II., was only completed by private enterprise about the year 1789. Even at the present time this is considered a great enterprise, and the tunnel looked upon as a good example of engineering skill; and as it has been thought by some that the Severn may be still further used with advantage in strengthening the exhausted resources of the

* See p. 355, *ante*.

Thames, we give the levels of the canal, and also the distance between navigable points of the two rivers :—

	Length			Rise.		Fall.	
	m.	f.	p.	f.	p.	f.	p.
From the head of the Stroud Canal at Wallbridge to Danaway-bridge	7	0	5	241	3	—	
From Danaway-bridge to the entrance of the tunnel	0	2	5	Level.		—	
The length of the tunnel	2	3	5	Ditto.		—	
From the end of the tunnel to Upper Siddington	5	3	3	Ditto.		—	
The branch to Cirencester	1	2	6	Ditto.		—	
From Upper Siddington to near Cricklade	5	4	4	—		102	2
From Cricklade to near Lechlade	8	0	5	—		28	4
	30	0	7	241	3	130	6

The Thames glides pleasantly along, and divides the counties of Berks and Oxfordshire, passing by Buscal-Harcourt, &c. to Oxford; from thence to Ifley, then on to Nuneham and Abingham, through the bridge of Wallingford, past the sweet village of Goring, the woods of Hardwick, the magnificent Maple Durham, and the pretty village of Cavesham, to the vicinity of Reading.

The Thames then continues its course through Henley and Maidenhead bridges, and before it reaches Marlow serpentines through its vale in a variety of pleasing courses; then through a delightful piece of country, rich in old associations, to Windsor, where the noble castle crowns one brow and the academic groves of Eton College the other. Fine views of the stately Castle may be seen as we follow the Thames to Runnymede, that spot so intimately associated with the liberty and progress of England; from Runnymede to Cowper's-hill, standing on which,

> "My eye, descending from the hill, surveys
> Where Thames amongst the verdant valleys strays."

Let us look at Conway Stakes, where it is said the Roman general and his army crossed the river. There is, however, a good deal of controversy about this. Space will not allow us to wait and go very deeply into this matter, but we may say that these stakes, which at times we believe are still visible, are acknowledged to be the work of people earlier than the Roman conquerors, and that no little engineering skill has been used in driving the piles into the solid earth.* Some writers say that these piles were placed there to bother the Romans, and others argue that the depth of the water here would prevent the army from fording the river; and it is mentioned by the chronicler of the event that the infantry marched across with their heads and shoulders above water.

Staines, Chertsey, Kingston—the place of the Saxon kings—the magnificent Hampton-court, Twickenham, with its pleasant memories, its garden, and meads, to Teddington (tide-ending town), where a last feeble wave but faintly reaches—it forms a pretty picture, with its little church, villas, and ornamental gardens. We take the tide past Richmond and Kew—and here let us say, that with a week's time, a small knapsack, a light heart, and almost as light a purse, staff in hand, a man might, either with sketch-book or fishing-rod, travel most delightfully from Richmond, along the banks of Father Thames, to Oxford. However, we come to Fulham, and Putney, and then our enthusiasm begins to slacken: even Chelsea does not cheer us; and, rather melancholy than otherwise, we stop before "Paul's," and shutting as well as we can both eyes and nose, let us look back to the time when no spires, no bridges, not even houses or huts stood on the site of this now huge mass of buildings, and varied conditions of struggling humanity.

When Sir Christopher Wren began to build the new St. Paul's, in digging for a foundation, he came to a layer of Saxon graves lined with chalk, some in stone coffins; and at some distance below, the bodies of the British, only lapped in woollen shrouds, fastened with pins of hard wood, most probably box-wood. In the same row, yet deeper (this was 18 feet and more), were the ashes of the Romans, in urns—Britons and Romans together—the conquerors and the conquered, both vanquished. Lower than those graves stood the foundation of old St. Paul's, resting on very close pot-earth; and still lower, nothing but dry sand sometimes mixed unequally, but mostly so loose that it would pass through the fingers; then water and sand mixed with periwinkles and other sea-shells,—this was about the level of low-water mark. The gradual rise of the site of London by the formation of shoals, &c. will be readily understood by the above account. It grew by natural causes, and at the time of the arrival of the Romans, was probably a rude British stronghold defended by earthworks, and backed by thick woods towards the north, and surrounded on other sides by an immense extent of water, amid which the present course of the Thames could scarcely be defined.

So far as we can gather from the best authorities, and also from consideration and examination of the neighbourhood, it is probable that the place now called St. George's-in-the-Fields had begun, at the time to which we refer, to have an appearance something similar to what we can fancy was presented by the Isle of Dogs 500 or 600 years since—a shade of land above the water. In consideration of the large quantities of Roman remains which have been dug up in the Borough, in the neighbourhood of Kent, &c. &c. some antiquaries have supposed that the Romans first established themselves there, and not in London. However, the probabilities are, that the site to which we have alluded was at an early period of the Roman occupation used as a place of burial for the dead. Maitland, a historian who did not write without having carefully examined matters, says, "It can hardly be supposed that the sagacious Romans would have made choice of so noisome a place for a station as St. George's-in-the-Fields must then have been, for to me it is evident, that those fields must have been overflowed by every spring tide. For, notwithstanding the river being at present confined by artificial banks, I have frequently at spring tides seen the small current of water which issues from the river Thames through a common sewer at the Falcon not only fill all the neighbouring ditches, but also at the upper end of Gravel-lane, overflow its banks into St. George's-fields; and considering that about a twelfth part of the water of the river is denied passage by the piers and starlings of (old) London-bridge (it flowing at an ordinary spring-tide upwards of 19 inches higher on the east than on the west side of the said bridge), I think that this is a plain indication that before the Thames was confined by banks, St. George's-in-the-Fields must have been considerably under water every high tide, and that that part of the said fields called Lambeth-marsh was under water not an age ago."

The embankment of the river, a most gigantic work, was, although we have no particular account, executed, or at least directed, by the Romans. Few of the thousands who enter the Thames think that the great stream on which vessels of the largest size are afloat, is, in fact, an artificial canal, raised in many places considerably above the level of the surrounding country. It is a wonderful work, and it is singular that we should have no record of its first execution. The artificial bank of river extends either on one side of the river or the other, almost from the Nore to Richmond in Surrey, and some judgment may be formed of its magnitude, by the difficulty of repairing a breach made by a high and violent tide at Dagenham, in Essex. On this occasion (1707), a breach was made in this bank of the river of 100 yards wide, and nearly 20 feet deep, by which alarming accident 1,000 acres of rich land in Dagenham level were overflowed, and nearly 120 acres of land washed into the Thames, forming a sandbank nearly a mile in length, that extended over one half of the channel. After several unsuccessful attempts, Captain Perry, who had been employed in similar works by the Czar Peter, in Russia, at an enormous expense and with much difficulty, completed a wall. In carrying on these embankments, there were discovered, about 4 feet under the surface of the earth, great numbers of trees with roots, boughs, and some parts of the bark, which may be supposed to have been thrown down by storms and floods. They were principally brushwood, willows, and yews. Large quantities of hazel-nuts have also been found here, and horns of stags of unusual dimensions.*

It is difficult to estimate the advantages of the Thames embankment. After that was completed, many districts would be gradually gained from the waters; and *Thorney Island* (the site of Westminster Abbey), a small place, partly covered with scrubby bushes, and on which at an early period a hermit established his cell, extended in various directions. Southwark also increased; but then Lambeth, Vauxhall, and Battersea, now occupied by so many thousands, were under water, as was the greater portion of the land from Wandsworth to Woolwich, to Dartford, to Gravesend, and to Sheerness; and from the north range from Poplar to the Isle of Dogs. Scores of miles of that waste are now covered by multitudes, or converted into rich pastures or corn-fields; and year after year, in our own days, we see the skill of man in all directions, either making a scene of industry, or a "garden of a desert waste." It is truly wonderful to think that a little more than twenty years ago the greater portion of the ship-building yard of Mr. Mare, at Blackwall, where from 4,000 to 5,000 persons are busily employed, was a swampy marsh, overflowed by every spring-tide. A small establishment, for the purpose of building steamers of a moderate size, was planted on a somewhat suitable spot, and then the works grew; and by skill, industry, and capital, old Father Thames was slowly and surely driven back. At times he has made vigorous sorties, in order to recover his lost ground; but by piles of wood, on which most of the buildings stand; by the busy hands of man, and the help of the steam-engine, he has been successfully repulsed; and on his lost territories Nasmyth's hammers thunder and work, furnaces blaze both day and night, and thousands of smaller hammers fashion great ships, like the *Himalaya*, capable of carrying at one time a small army. A large town will soon spring up in the neighbourhood, and before long some miles of docks, filled with shipping, will extend eastward.

The Isle of Dogs is also rapidly being covered with houses and manufactories. In other places, in Lincolnshire, for instance, the land is becoming greater and the water less. The growth of populations on flat districts, urges the strong necessity of improved methods of draining and purifying towns, for it will not do for long to convert our rivers into sewers, and to waste that which, if applied to agriculture, would add to the fertility of the country. East of Dowgate, the first London-bridge was built. The date of this important event is uncertain, but was most probably between 993 and 1016. The importance of other matters in connection with Father Thames obliges us to pass slightly over the fearful invasions of the Danes, the ravaging and burning, the destruction of the early London bridge, the difficulty of keeping it in repair, and the story of the ferryman's daughter. We may, however, mention that it was burnt down in 1136, and in 1163 it was in such ill condition that directions were given to Peter, the curate of St. Mary's Cole Church, for building a new bridge.

The money required for the works at London-bridge was levied in various ways, not from London alone, but also from the provinces. In 1097, William Rufus exacted large sums of money in all parts of the kingdom, towards the carrying on his works at the Tower of London, at Westminster, and also in rebuilding London-bridge anew, with wood, which some time before (1091) had been carried away by a great flood: it would thus appear, that for upwards of six years London was left without a bridge.

That these levies were continued, with but few exceptions, in the time of Henry I. is shown by the following order:—

"Henry, King of England, to Ralph, Bishop of Chichester, and all the ministers of Sussex, sendeth, greeting. Know you, &c. * * I command by my kingly authority, that the

* Mr. Gale, who wrote a dissertation on the Conway stakes about 1794, mentions the great difficulty experienced by an antiquary in obtaining a specimen of the stakes. He tried various plans; amongst others, fastening a rope to one of the stakes, and then to a large vessel propelled by a strong tide: the rope, however, broke several times, and at length, with difficulty, a portion was sawn off under the water, at low tide. The oak had become as hard and black as ebony.

* Similar matters were turned up at the excavation for the Victoria Docks, at Poplar. See account in *Builder*, vol. xii. p. 4 4.

manor called Alchester, which my father gave with other lands to the Abbey of Bath, be free and quiet from shires and hundreds, and all other customs of earthly servitude, as my father held the same most freely and quickly, and, namely, from the work of London-bridge," &c.

At about this time two or three important events occurred on the Thames, which we are bound to mention.

In 1099, a very high tide happened, which occasioned the River Thames to overflow its banks in divers places, whereby several towns and villages were laid under water, and many of their inhabitants, with an infinite number of sheep and oxen, were drowned; at which time the Godwin Sands were swallowed up by the sea.

In 1114, there happened such a defect of water in the River Thames, that great numbers of persons crossed, not only above and below London-bridge, but likewise through several of its arches, upon the ground with dry feet. This is a curious circumstance, and shows that the confinement of the river to a distinct channel has deepened its bed, for it would be next to an impossibility to ford at London-bridge now. We might infer the same thing, if *Hungerford* was, as it name implies, formerly a ford.

In 1150, after a wet season, the River Thames was frozen. Here, however, we must for the present pause, somewhat refreshed by even the idea of the benefit to Father Thames (if such a thing could be), of a sharp frost in these dog-days,—an idea that brings to our recollection the following petition, which we find reported in the *Gentleman's Magazine*, for the winter of 1740. It is as follows:—

"To the venerable sages of Westminster-hall, the humble petition of the River Thames, sheweth,—

"His complaint is of North and East, a couple of boisterous and mischievous bailiff's followers, who deprive him of the use of his limbs, and in one February night turn him as grey as a cat. * * * * He has become so hard and unnatural, that thieves and others trample upon him. * * * *" But we must cut short this old complaint, suggesting to him to try the use of a petition in his present unfortunate position, — which is worse for him and for others than the attack of the boisterous fellows he alludes to.

COLOUR IN THE CONSTRUCTION OF BUILDINGS.

At the present day there is, I think, absolutely no one point in which we fail so much, and about which the world in general has so little feeling, as that of colour. Our buildings are, in nine cases out of ten, cold, colourless, insipid, academical studies, and our people have no conception of the necessity of obtaining rich colour, and no sufficient love for it when successfully obtained. The task, therefore, and duty of architects at the present day is mainly that of awakening and then satisfying this feeling; and one of the best and most ready vehicles for doing this exists, no doubt, in the rich-coloured brick so easily manufactured in this country, which, if properly used, may become so effective and admirable a material.

The other mode of introducing colour in construction, by means of the use of marbles, deserves also some notice. In my notes upon the buildings as they were passed on my journey, I have described two modes in which this kind of work was treated: the first was that practised in Venice, the veneering of brick walls with thin layers or coats of marble; the other, that practised at Bergamo, Cremona, and Como, in which the marble formed portion of the substance of the wall.

These two modes led, as would naturally be expected, to two entirely different styles and modes of architecture.

The Venetian mode was probably rather likely to be destructive of good architecture, because it was sure to end in an entire concealment of the real construction of the work: the other mode, on the contrary, proceeded on true principles, and took pleasure in defining most carefully every line in the construction of the work. It might also be said that one mode was devised with a view to the concealment, and the other with a view to the explanation, of the real mode of construction.

I have already described, at some length, the main features of these old works in marble, and I feel, therefore, that all that need now be done is to point out the degree to which they afford matter for our imitation with the coloured materials and marbles which we fortunately have in Great Britain fit for the purpose, though not in very great variety.

There certainly appears to me to be a certain extent to which we may safely go in the way of inlaying or incrustation: we may, for instance, so construct our buildings as that there may be portions of the face of their walls in which no strain will be felt, and in which this absence of strain will be at once apparent: obviously, to instance a particular place, the spaces enclosed within circles constructed in the spandrels of a line of arches can have no strain of any kind: they are portions of wall without any active function, and may safely be filled in with materials the only object of which is to be ornamental. All kinds of sunk panels enclosed within arches or tracery would come under the same head: so also the spaces between string-courses might very frequently, if, as in old examples, the string-courses were large slabs of stone bedded into the very midst of the wall, and so capable of protecting the thin weak slabs of marbles encrusted between them.

In Venice we have some grand examples, at S. Mark's, of this system of incrustation filling in the whole of the space within large arches: here it is lawful, because there is no weight upon it to thrust it out of its place or disjoint it, as the least pressure most certainly always will. So far in praise of the Venetian system. But in other parts of the same building we have this system carried to a length which I cannot but think most mistaken, and which I most heartily trust may never find imitators here. In these they constructed their arches in brick, and then entirely covered them with marble. Of course there was some difficulty in doing this, and the way in which the difficulty was met was sufficiently ingenious: a succession of thin slabs of marble were placed round the soffit of the arch, having perhaps enough of the cohesion given by the form of the arch to enable them to support their own weight, and further supported by metal staples let into the joints of the brickwork. The edges of these thin slabs projected sufficiently in advance of the face of the brickwork to allow of their being worked with some kind of pattern—generally, as has before been said, a sort of dentil—and giving some support to the thin slices of marble with which the walls were then covered. The whole system was excessively weak; and this can nowhere be better seen than in the Fondaco de Turchi, where almost the whole of the marble facing and beautiful medallions, in which it was once so rich, have peeled off, and left nothing but the plain and melancholy sub-stratum of brick. Few architects, I should think, would like to contemplate their work perishing in this piecemeal manner, nor any more would they enjoy the thought of a west front left, like that of Sta. Anatasia at Verona, unfinished and prepared only for marble with rough, irregular, and unsightly brickwork.

It would be unjust not to say that often, very often, this system of incrustation, even when carried to the extreme limits of what seems to be lawful, wins upon our love by the exquisite delicacy and taste of the sculptured patterns, worked in low-relief, with which it is covered. The men who did this work were, perhaps, more of sculptors than of architects, and certainly it must be confessed that never in buildings in which the construction is mainly thought of, so far as I know, is so much elaborate thought and skill exhibited in the decorative part of the work as in buildings such as these.

Sometimes, too, the sculptured medallions set in the centre of a plain surface of marble are of exquisite taste and beauty; whilst here and there, as *e. g.* in S. Mark's, and in one or two spots in the water-front of the Ducal Palace, are examples of great beauty, of medallions formed of marbles of various colours, arranged with great refinement in some kind of geometrical pattern, which show another and equally beautiful mode of relieving plain spaces of walling.

The surfaces of the walls in Venetian work were either entirely inlaid, or else inlaid within a square enclosing border of projecting moulding. The inlaying was composed of a number of rectangular slabs of marble, not by any means always of the same size, supported to some extent by the projections of the enclosing marbles or by those of the archivolt, but always dependent mainly on metal cramps let into the fabric of the wall; and, when possible, these marbles were slabs cut out of the same block, and put side by side, so as to produce a kind of regular pattern wherever the veining of the marble was at all positively marked.

The other mode of introducing constructional colour in marble commends itself to one's reason as that which is most likely to endure for ages, and as that, therefore, which ought, wherever it may be, to be adopted. The first idea of the architects of these buildings seems to have been to arrange their material with as much regard to strong contrasts of colour as was possible. The first thing they did, therefore, was to alternate the colours of every course of masonry, either simply as in the Broletto at Como, and in Sta. Maria Maggiore at Bergamo, or as in the west front of the cathedral at Cremona, where very narrow layers of white marble are laid between each of the other courses, which are of course so much the more defined.

The description which I have already given of these works, as well as of the porch at Bergamo, will show how regular is the way in which this system of counterchanging the colours was carried out by the purely constructional school: this is, in fact, the great mark of difference between the constructional and the encrusting school of Italian architects, the whole arrangement of coloured materials by the two schools being quite different, and producing singularly different results. The most common faults of the Venetian system of incrustation must have been that upon a general surface of plain wall you had here and there a square patch of marble surrounding a window opening: that of the other system would be, in the opinion of many, that you have too stripy an effect of colour, and that all the divisions, moreover, are horizontal.

The former must certainly have been the case wherever the incrustation did not extend over the whole surface of the walls; and this was very frequent: but the latter is not really a fault; it was only an elaboration in a more beautiful material of the same system which we have seen pursued with such happy results by the builders of Verona in brick and stone,* and which we find adopted by the architects of Northern Germany in the frequent alternation of courses of red and black brick, and sometimes by our own forefathers in the coursing of flint-work with stone, or in the counter-charging of red and white stones which we see in some of the Northamptonshire churches. The system was a thoroughly sound one, because it not only proceeded from and depended on the natural arrangement of the material, but afforded the best possible means for displaying the various colours which were to be used.

Probably all these systems are mainly useful now as showing us certain principles which we may work out and apply to our own somewhat different circumstances; and surely one of our first objects ought to be the discovery of the extent of our means and opportunities, which in this matter are at the present day far beyond what is generally imagined.

It must never be forgotten by us that our forefathers had very limited means of obtaining materials from one locality and transporting them to another; and were, moreover, to a great extent, unacquainted with the materials which might, if necessary, be obtained. We have not this excuse: we not only know what materials we may obtain, but we have at the same time marvellous facilities for their conveyance between all parts of the country; and we know

* Some of the mediæval buildings in Greece have small patterns carved in low relief all round the walls in occasional courses, which is evidently intended to produce the kind of effect referred to above.

also how much has been done of old in other countries by using them in a proper way.

No excuse therefore can be found for us if we continue to neglect to avail ourselves of them, as though they were still undiscovered. We have alabaster, which may be wrought at a really trifling expense; large fields of marbles, of which those of Devonshire and Ireland are particularly valuable for architectural decoration, and those of Derbyshire and Purbeck for the formation of shafts and columns: we have, moreover, an exhaustless supply of granites of various colours; of magnificent serpentine; and, lastly, of building-stones of various colours, very effective when contrasted. In addition to these natural materials we have every facility for making the most perfect bricks; and, owing to the excellence already achieved by our manufacturers of pottery, we have no difficulty in making tiles, either for roofing or inlaying, of any degree of beauty either of colour or form.

With such advantages we ought long since to have effected far more than we have ever attempted, or apparently ever thought of. Our buildings should, both outside and inside, have had some of that warmth which colour only can give: they should have enabled the educated eye to revel in bright tints of Nature's own formation, whilst to the uneducated eye they would have afforded the best of all possible lessons, and by familiarizing it with, would have enabled it to appreciate, the proper combination of colour and form.

Besides this, if ever the day shall come when our buildings thus do their duty and teach their proper lesson to the eye, we may hope that we shall see a feeling, more general and more natural, for colour of all kinds, and for art, of every variety, in the bulk of our people. At present it is really saddening to converse with the majority of educated men on any question of colour: for them it has no charms and no delight. The puritanical uniformity of our coats, indeed of all our garments, is but a reflection from the prevailing lack of love of art or colour of any kind. A rich colour is thought vulgar, and that only is refined which is neutral, plain, and ugly.

Perhaps in all this there may be something more than art can ever grapple with: it may be ingrain and part of the necessity of the present age; but, if so, oh! for the days when, as of yore, colour may be appreciated and beloved, when uniformity shall not be considered beauty, nor an ugly plainness be considered a fit substitute for severity! Oh! too, for the days when men shall have cast off their shame-faced dependence on other men's works and the art of other ages, and, like true men and faithful, shall honestly and with energy, each in his own sphere, set to work to do all that in him lies to increase the power of art and to advance its best interests. All these aims and objects are more or less bound up with the best interests of a people, however old and however powerful, because they depend for ultimate and real success upon the thorough belief, on the part of all its votaries, in certain great and eternal principles, which, if always acted upon, would beyond all doubt sometimes make great artists and always good men.*

ART-UNION OF LONDON EXHIBITION.

The annual exhibition of works of art selected by the prizeholders in the Art-Union of London is now open at the Gallery of British Artists, Suffolk-street. "The Fortune-teller," by J. Sant, "Dante begging his Bread," by Hurlstone, "Relenting," by T. Brooks, and "Autumn in the Highlands," by S. Percy, occupy the principal centres in the large room, and Mr. Buckner's "Family at Saraginesco" has the place of honour in the second room. As we have already given a list of the principal pictures purchased by the prizeholders, and mentioned many of them in our notices of the various exhibitions, it will not be necessary now to particularize to any extent. There are some very excellent landscapes by Gilbert, H. J. Boddington, Hulme, Witherington, Willis, G. Stanfield, J. Danby, and others, and "Free Sittings," by J. Underhill; "Cuddie Headrigg," by D. W. Deane; "The Truant," by G. Smith; "Lalla Rookh," by F. Wyburd; "The Keeper's Companions," by Harry Hall; "An Italian Mother Praying," by H. Pickersgill; and "Haymaking," by G. E. Hicks, will not escape notice. In the water-colour room, there are some excellent drawings by Gastineau, Absolon, Taylor, Callow, John Gilbert, Mole, Bennet, H. Warren, E. Warren, Robins, and others.

The engraving for the current year, "Harvest in the Highlands," after Landseer and Callcott, is a very fine work.

A glance over the Society's published report might lead some of our readers to say, with the *Morning Advertiser*, that "whatever difference of opinion may exist as to some of the plans adopted by the Society, it must be universally acknowledged to have been carried on with an energy never surpassed, at all events by an amateur corporation—with no feuds and increasing success."

* From "Brick and Marble in the Middle Ages: Notes of a Tour in the North of Italy." By G. E. Street, Architect. London: John Murray.

SHOPS AT AUDLEY, CHESHIRE.

We here give the plan and elevation of a block of village shops now in the course of erection at Audley, in Cheshire, from the designs of Mr. W. White. The row forms the side of a very narrow street (16 feet wide), and, to make the most of the space, the ground-floor is made to recede beneath an arcade, thus forming a covered way 3 feet 2 in. wide for the protection of foot-passengers—somewhat after the fashion of the rows at Chester. Between the third and fourth houses is an arched entrance to the stable-yard.

The whole is built of red brick, with a few bands of black headers, the arches being relieved by the introduction of a few black and buff bricks, the arrangement of which is shown to a half-inch scale in the elevation of the lower part. The roofs are to be covered with red tiles. The ground falls rather rapidly, and thus gives occasion for a little picturesque deviation from the uniformity of the general treatment.

THE DESIGNS OF THE BOARD OF ORDNANCE.

A writer in the current number of the *Ecclesiologist* draws attention, as we have done before, to the evil effects resulting from the course pursued by the Board of Ordnance, who persist in compelling the members of a military corps to fulfil the duties of civil architects. He gives the barracks now in course of erection at Devonport as an example. The recent offer of premiums by the Board for designs for barracks, to be sent in by the 30th of September next, may be regarded as an indication of their willingness to adopt another system. We hope to see some thoroughly good designs amongst those sent in. The fullest information should be obtained, both at home and abroad; and then, working on this, skill, attention, and intelligence will achieve success and found a reputation.

As regards the decision, we shall expect to find in the Board that acute sense of honour which we associate with the character of English soldiers.

STAINED GLASS.

Two windows in St. Peter's College, Cambridge, have been filled with stained glass, from the royal manufactory at Munich. They are treated pictorially, we understand, and without regard to the mullions.

The large west window of the new church at Ambleside,—a window of four lights, of the Decorated period, has now received the stained glass prepared for it by Mr. Warrington. The subjects relate to baptism and regeneration, and are as follow:—

1. St. John preaching in the Wilderness.—Inscribed, "Repent ye, for the kingdom of heaven is at hand."

2. Our Lord's Presentation in the Temple.—"Lord, now lettest thou thy servant depart in peace, according to thy word, for mine eyes have seen thy salvation."

3. The Baptism of Our Lord.—"This is my beloved Son, in whom I am well pleased."

4. Our Lord inspiring the Apostles, and commissioning them.—"Receive ye the Holy Ghost: whosesoever sins ye remit they are remitted unto them."

These subjects are all surmounted with tabernacle work, interspersed with the symbolic vine, and containing, in various niches, Evangelistic figures.

If we remember rightly, there is some very indifferent glass in other windows of this charmingly-situated church, and we shall be glad to find that we can endorse the praise given to Mr. Warrington's work by the local press.

We do not make the progress in stained glass that might be looked for. The majority of windows put in are poor things, and, unluckily, it is not the best that the public praise most. What we want is a glass painter who will combine religious feeling, earnestness, invention, good drawing, and good colouring. Years ago, the writer of this notice sought to convince the English public that, with enlightened patronage works, in stained glass, rivalling anything of previous times, might be produced; and we still believe it, though certainly they come slowly. "The only way in which the regeneration of stained glass," says Mr. Oliphant, in his modestly-written "Plea for Stained Glass,"* "is by insisting upon all those qualities of design and composition in glass which are deemed indispensable in other arts; the same correct drawing—and in the attainment of this, there is no need to destroy any conventional propriety,—the well discriminated but low relief which softens, without injuring the flatness of the surface—the distinctness of its gradations and contrasts; and, lastly, that the quality and beauty of its material be fully developed in all its brilliant scale of light and colour; and the cost, rely upon it, will regulate itself in glass as in every thing else. In other words, accept nothing but good glass, good design and execution, good and correct drawing, a composition suited to the place and subject, and an artistic treatment of colour, worthy of the splendour of the material employed. Do this, and you will speedily have glass worthy of the art-enlightenment of the time, worthy of its own scope and opportunities, and which will add a fair and brilliant flower to the wreathed coronal of art."

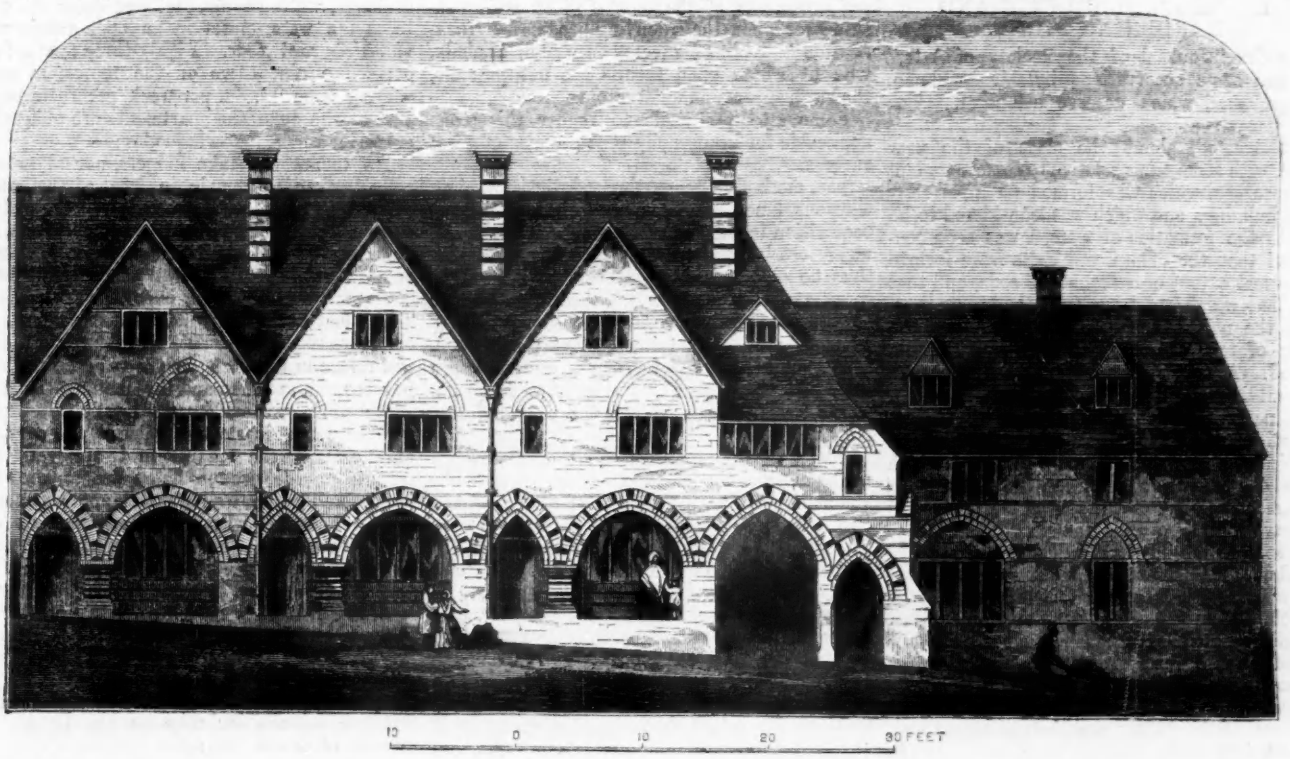
Mr. Oliphant discusses in his little volume on "Painted Glass," first, the field it has to work on; secondly, the material it has to work with; thirdly, the purpose for which it is introduced; fourthly, its scope, capabilities, and distinctive qualities; and lastly, its universal applicability. We gladly take this opportunity to recommend it for wide perusal.

* Published by J. H. Parker, Oxford and London.

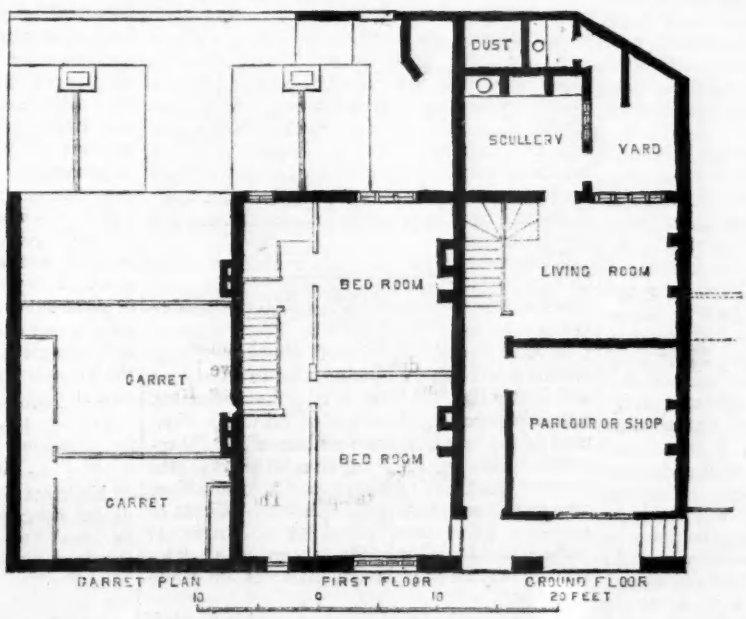
UNDERGROUND ROOMS AND CELLARS IN THE METROPOLIS.

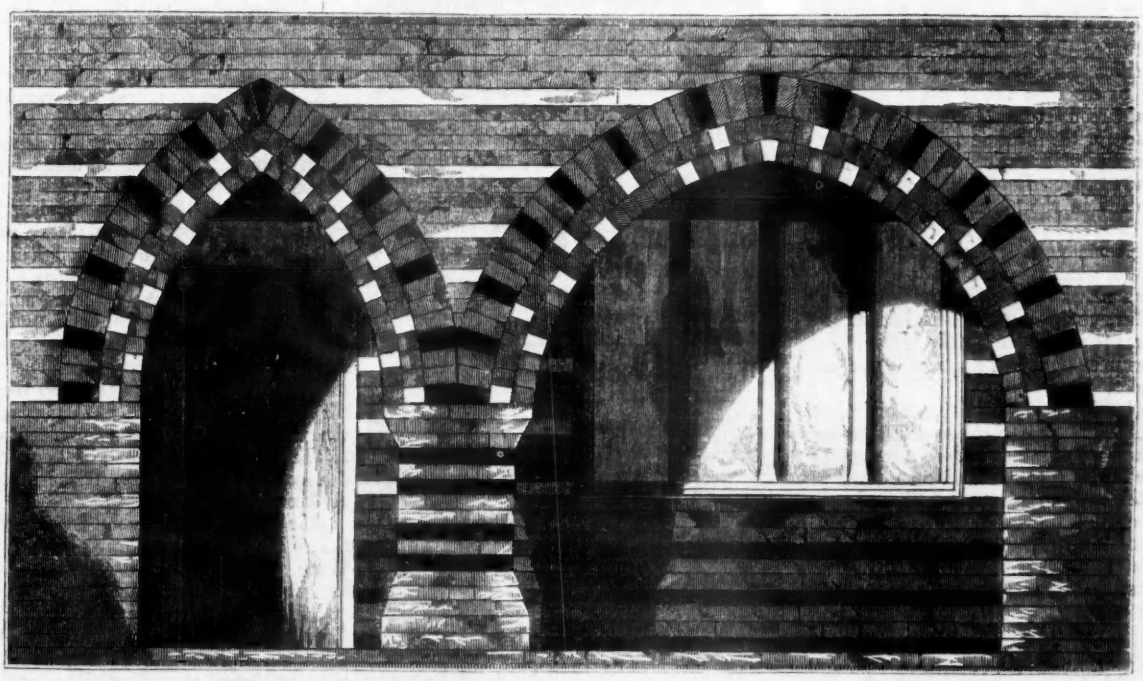
The provisions which have now existed for about ten years in the Metropolitan Buildings Act, with reference to the occupation of cellars and rooms unfit for habitation, will be, we are glad to observe, re-enacted in the new Metropolitan Buildings Act and Metropolis Local Management Act, being made more stringent, and capable of being carried out. An Inspector of Nuisances will be appointed by every vestry or Local Board, who will see that such cellars and rooms, unfit for habitation, are not so used, and will enforce the penal clauses of the Act in cases of infraction. We were gratified at hearing Lord Wodehouse, who had the conduct of both Bills for the Government in the House of Lords, remark, on Monday night, in the House, that it was not proper that the district surveyors should have the duty of enforcing the penalties imposed in that behalf, and so retracting, on behalf of the Government, the charge which had been made against these officers at the commencement of the session, that such a duty is imposed upon them by the present Buildings Act, and that they had failed to discharge it.

The Gloucester City Surveyorship.—Mr. J. Hanvey, of Burslem, C.E. has been appointed surveyor to the City of Gloucester.



10 0 10 20 30 FEET





SHOPS, AT AUDLEY, CHESHIRE.—Mr. W. White, Architect.

also how much has been done of old in other countries by using them in a proper way.

No excuse therefore can be found for us if we continue to neglect to avail ourselves of them, as though they were still undiscovered. We have alabaster, which may be wrought at a really trifling expense; large fields of marbles, of which those of Devonshire and Ireland are particularly valuable for architectural decoration, and those of Derbyshire and Purbeck for the formation of shafts and columns: we have, moreover, an exhaustless supply of granites of various colours; of magnificent serpentine; and, lastly, of building-stones of various colours, very effective when contrasted. In addition to these natural materials we have every facility for making the most perfect bricks; and, owing to the excellence already achieved by our manufacturers of pottery, we have no difficulty in making tiles, either for roofing or inlaying, of any degree of beauty either of colour or form.

With such advantages we ought long since to have effected far more than we have ever attempted, or apparently ever thought of. Our buildings should, both outside and inside, have had some of that warmth which colour only can give: they should have enabled the educated eye to revel in bright tints of Nature's own formation, whilst to the uneducated eye they would have afforded the best of all possible lessons, and by familiarizing it with, would have enabled it to appreciate, the proper combination of colour and form.

Besides this, if ever the day shall come when our buildings thus do their duty and teach their proper lesson to the eye, we may hope that we shall see a feeling, more general and more natural, for colour of all kinds, and for art, of every variety, in the bulk of our people. At present it is really saddening to converse with the majority of educated men on any question of colour: for them it has no charms and no delight. The puritanical uniformity of our coats, indeed of all our garments, is but a reflection from the prevailing lack of love of art or colour of any kind. A rich colour is thought vulgar, and that only is refined which is neutral, plain, and ugly.

Perhaps in all this there may be something more than art can ever grapple with: it may be ingrain and part of the necessity of the present age; but, if so, oh! for the days when, as of yore, colour may be appreciated and beloved, when uniformity shall not be considered beauty, nor an ugly plainness be considered a fit substitute for severity! Oh! too, for the days when men shall have cast off their shame-faced dependence on other men's works and the art of other ages, and, like true men and faithful, shall honestly and with energy, each in his own sphere, set to work to do all that in him lies to increase the power of art and to advance its best interests. All these aims and objects are more or less bound up with the best interests of a people, however old and however powerful, because they depend for ultimate and real success upon the thorough belief, on the part of all its votaries, in certain great and eternal principles, which, if always acted upon, would beyond all doubt sometimes make great artists and always good men.*

ART-UNION OF LONDON EXHIBITION.

The annual exhibition of works of art selected by the prizeholders in the Art-Union of London is now open at the Gallery of British Artists, Suffolk-street. "The Fortune-teller," by J. Sant, "Dante begging his Bread," by Hurlstone, "Relenting," by T. Brooks, and "Autumn in the Highlands," by S. Percy, occupy the principal centres in the large room, and Mr. Buckner's "Family at Saraginesco" has the place of honour in the second room. As we have already given a list of the principal pictures purchased by the prizeholders, and mentioned many of them in our notices of the various exhibitions, it will not be necessary now to particularize to any extent. There are some very excellent landscapes by Gilbert, H. J. Boddington, Hulme, Witherington, Willis, G. Stanfield, J. Danby, and others, and "Free Sittings," by J. Underhill; "Cuddie Headrigg," by D. W. Deane; "The Truant," by G. Smith; "Lalla Rookh," by F. Wyburd; "The Keeper's Companions," by Harry Hall; "An Italian Mother Praying," by H. Pickersgill; and "Haymaking," by G. E. Hicks, will not escape notice. In the water-colour room, there are some excellent drawings by Gastineau, Absolon, Taylor, Callow, John Gilbert, Mole, Bennet, H. Warren, E. Warren, Robins, and others.

The engraving for the current year, "Harvest in the Highlands," after Landseer and Callcott, is a very fine work.

A glance over the Society's published report might lead some of our readers to say, with the *Morning Advertiser*, that "whatever difference of opinion may exist as to some of the plans adopted by the Society, it must be universally acknowledged to have been carried on with an energy never surpassed, at all events by an amateur corporation—with no feuds and increasing success."

* From "Brick and Marble in the Middle Ages: Notes of a Tour in the North of Italy." By G. E. Street, Architect. London: John Murray.

SHOPS AT AUDLEY, CHESHIRE.

We here give the plan and elevation of a block of village shops now in the course of erection at Audley, in Cheshire, from the designs of Mr. W. White. The row forms the side of a very narrow street (16 feet wide), and, to make the most of the space, the ground-floor is made to recede beneath an arcade, thus forming a covered way 3 feet 2 in. wide for the protection of foot-passengers—somewhat after the fashion of the rows at Chester. Between the third and fourth houses is an arched entrance to the stable-yard.

The whole is built of red brick, with a few bands of black headers, the arches being relieved by the introduction of a few black and buff bricks, the arrangement of which is shown to a half-inch scale in the elevation of the lower part. The roofs are to be covered with red tiles. The ground falls rather rapidly, and thus gives occasion for a little picturesque deviation from the uniformity of the general treatment.

THE DESIGNS OF THE BOARD OF ORDNANCE.

A writer in the current number of the *Ecclesiologist* draws attention, as we have done before, to the evil effects resulting from the course pursued by the Board of Ordnance, who persist in compelling the members of a military corps to fulfil the duties of civil architects. He gives the barracks now in course of erection at Devonport as an example. The recent offer of premiums by the Board for designs for barracks, to be sent in by the 30th of September next, may be regarded as an indication of their willingness to adopt another system. We hope to see some thoroughly good designs amongst those sent in. The fullest information should be obtained, both at home and abroad; and then, working on this, skill, attention, and intelligence will achieve success and found a reputation.

As regards the decision, we shall expect to find in the Board that acute sense of honour which we associate with the character of English soldiers.

STAINED GLASS.

Two windows in St. Peter's College, Cambridge, have been filled with stained glass, from the royal manufactory at Munich. They are treated pictorially, we understand, and without regard to the mullions.

The large west window of the new church at Ambleside,—a window of four lights, of the Decorated period, has now received the stained glass prepared for it by Mr. Warrington. The subjects relate to baptism and regeneration, and are as follow:—

1. St. John preaching in the Wilderness.—Inscribed, "Repent ye, for the kingdom of heaven is at hand."

2. Our Lord's Presentation in the Temple.—"Lord, now lettest thou thy servant depart in peace, according to thy word, for mine eyes have seen thy salvation."

3. The Baptism of Our Lord.—"This is my beloved Son, in whom I am well pleased."

4. Our Lord inspiring the Apostles, and commissioning them.—"Receive ye the Holy Ghost: whosesoever sins ye remit they are remitted unto them."

These subjects are all surmounted with tabernacle work, interspersed with the symbolic vine, and containing, in various niches, Evangelistic figures.

If we remember rightly, there is some very indifferent glass in other windows of this charmingly-situated church, and we shall be glad to find that we can endorse the praise given to Mr. Warrington's work by the local press.

We do not make the progress in stained glass that might be looked for. The majority of windows put in are poor things, and, unluckily, it is not the best that the public praise most. What we want is a glass painter who will combine religious feeling, earnestness, invention, good drawing, and good colouring. Years ago, the writer of this notice sought to convince the English public that, with enlightened patronage works, in stained glass, rivalling anything of previous times, might be produced; and we still believe it, though certainly they come slowly. "The only way in which the regeneration of stained glass," says Mr. Oliphant, in his modestly-written "Plea for Stained Glass,"* "is by insisting upon all those qualities of design and composition in glass which are deemed indispensable in other arts; the same correct drawing—and in the attainment of this, there is no need to destroy any conventional propriety,—the well discriminated but low relief which softens, without injuring the flatness of the surface—the distinctness of its gradations and contrasts; and, lastly, that the quality and beauty of its material be fully developed in all its brilliant scale of light and colour; and the cost, rely upon it, will regulate itself in glass as in every thing else. In other words, accept nothing but good glass, good design and execution, good and correct drawing, a composition suited to the place and subject, and an artistic treatment of colour, worthy of the splendour of the material employed. Do this, and you will speedily have glass worthy of the art-enlightenment of the time, worthy of its own scope and opportunities, and which will add a fair and brilliant flower to the wreathed coronal of art."

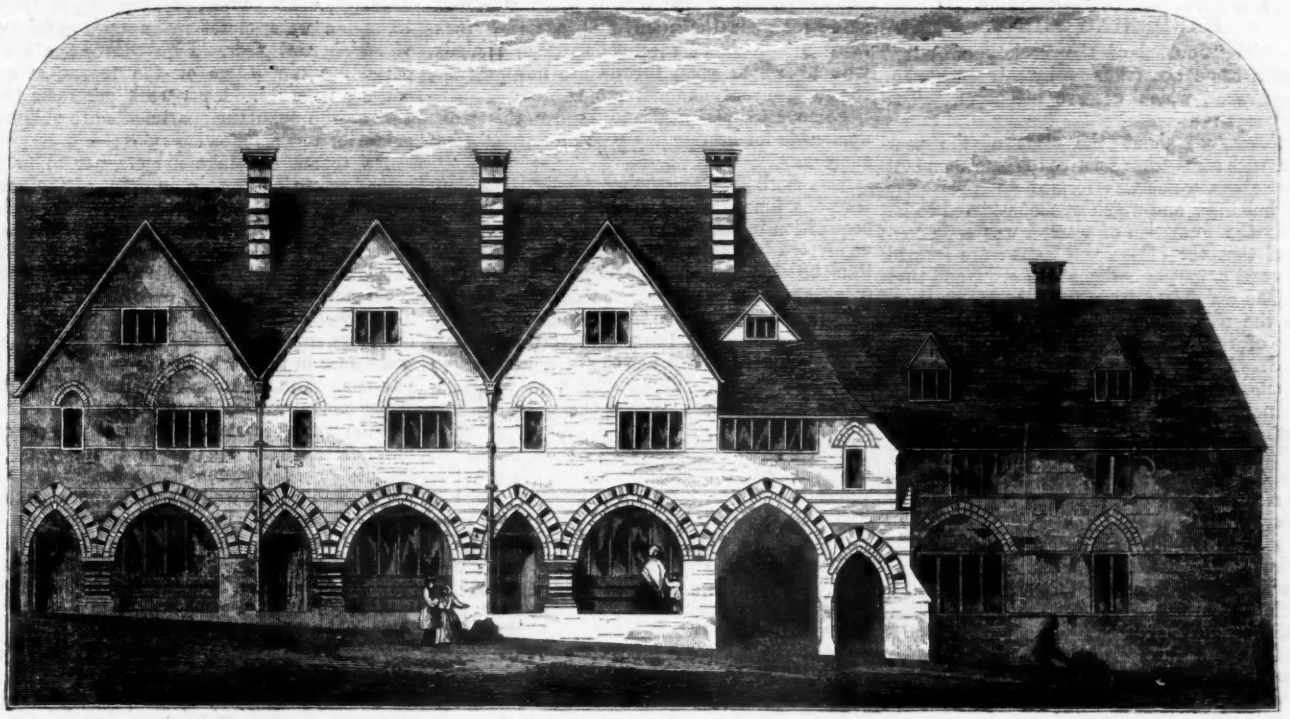
Mr. Oliphant discusses in his little volume on "Painted Glass," first, the field it has to work on; secondly, the material it has to work with; thirdly, the purpose for which it is introduced; fourthly, its scope, capabilities, and distinctive qualities; and lastly, its universal applicability. We gladly take this opportunity to recommend it for wide perusal.

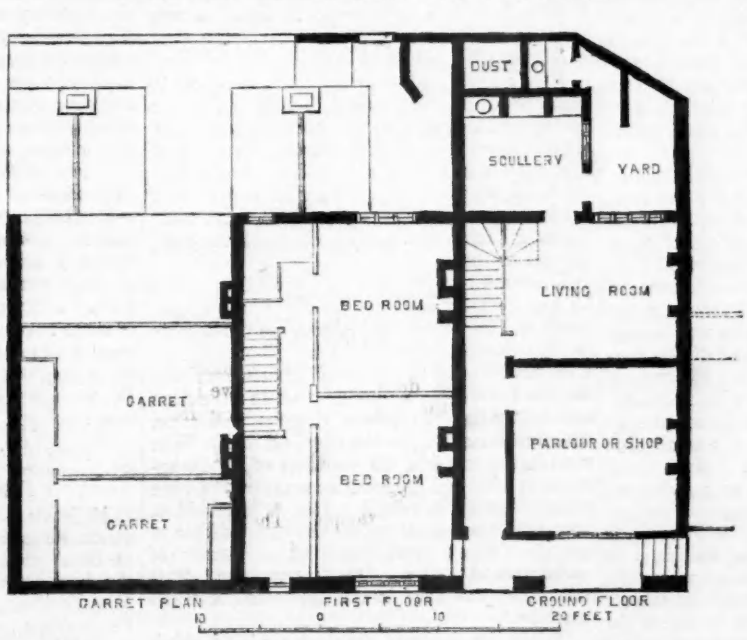
* Published by J. H. Parker, Oxford and London.

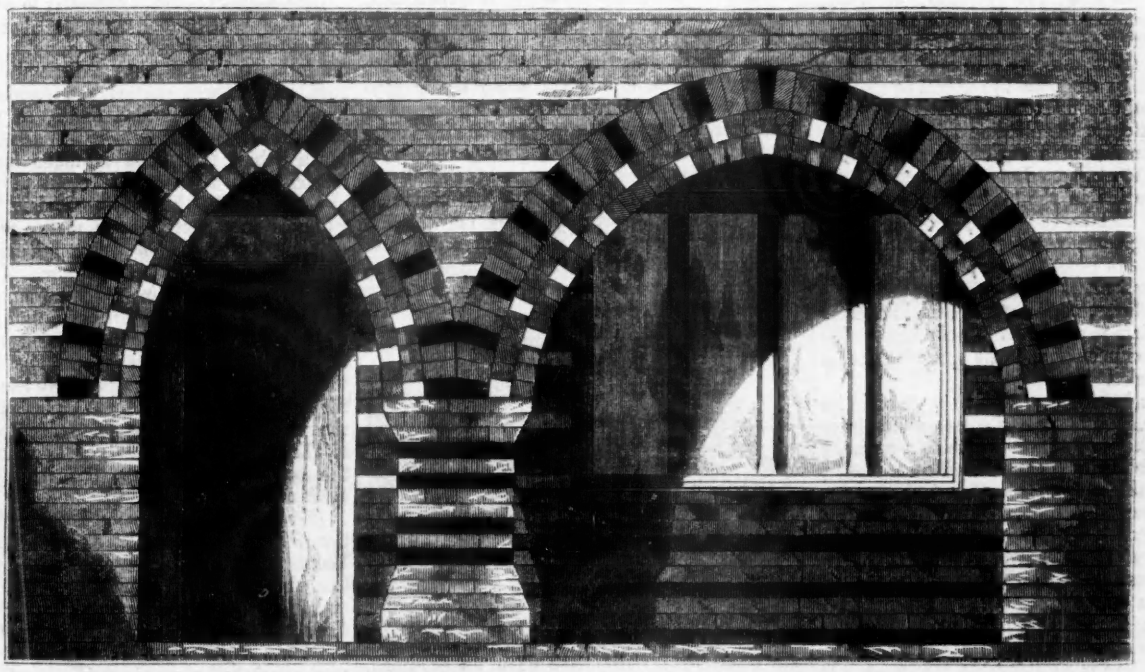
UNDERGROUND ROOMS AND CELLARS IN THE METROPOLIS.

The provisions which have now existed for about ten years in the Metropolitan Buildings Act, with reference to the occupation of cellars and rooms unfit for habitation, will be, we are glad to observe, re-enacted in the new Metropolitan Buildings Act and Metropolis Local Management Act, being made more stringent, and capable of being carried out. An Inspector of Nuisances will be appointed by every vestry or Local Board, who will see that such cellars and rooms, unfit for habitation, are not so used, and will enforce the penal clauses of the Act in cases of infraction. We were gratified at hearing Lord Wodehouse, who had the conduct of both Bills for the Government in the House of Lords, remark, on Monday night, in the House, that it was not proper that the district surveyors should have the duty of enforcing the penalties imposed in that behalf, and so retracting, on behalf of the Government, the charge which had been made against these officers at the commencement of the session, that such a duty is imposed upon them by the present Buildings Act, and that they had failed to discharge it.

The Gloucester City Surveyorship.—Mr. J. Hanvey, of Burslem, C.E. has been appointed surveyor to the City of Gloucester.







SHOPS, AT AUDLEY, CHESHIRE.—Mr. W. White, Architect.

ON HYDRAULIC LIMES AND HARDENING STONE.

In the "Journal of the Society of Arts," we find some observations by M. Kuhlman, from *Cosmos*, which deserve attention. The writer says:—

"Entrusted, about the close of the year 1840, with some trials relative to some abundant efflorescence, which was formed on a perfectly new building, and which was considered to be due to the formation of nitre, I was soon convinced that the efflorescent salts were formed to a great extent of carbonate of soda, and that the lime which had been used (hydraulic lime, from the neighbourhood of Tournay), was the cause of the efflorescence which had been observed. A closer examination soon taught me that all limes, and particularly hydraulic limes and natural cements, contained appreciable quantities of potash and soda.

Theory of Hydraulic Limes.—In a work which I had the honour of presenting to the Academy, at a meeting held on the 5th of May, 1841, I endeavoured to explain the part which potash and soda might play in stones and cements, and I admitted that these alkalies served to bring the silica to the lime, and thus to form silicates, which, by means of the application of water, solidified a portion of the mass, producing the formation of a hydrate, analogous to that which takes place with plaster. I have pointed out since then to the Academy numerous facts as the basis of this theory, and that, among others, of the immediate change from fat lime to hydraulic lime, by simply treating with a solution of silicate of potash. If, after the burning of the limestone, potash is in contact with silica, the silicate which is formed must necessarily react, and this can only take place as soon as the burnt lime is brought into contact with water.

I have greatly added to my experiments on this head, and I have established the fact that, with fat lime and silicate of potash, both of them pulverised and mixed in the proportion of 10 or 12 of silicate to 100 of lime, a lime can be obtained which shall have all the characteristics of hydraulic lime. If these substances are not well pulverised the reaction will be very incomplete, and an effect will subsequently be produced, bringing on disintegration. If from my former trials there results the possibility of converting a fat lime into an hydraulic mortar, by sprinkling it with a solution of an alkaline silicate, in my more recent trials I have found a means of producing at once, with a vitreous silicate and lime, hydraulic cements of any required degree of strength. This will enable us to form, at a reasonable expense, buildings to stand the action of water, in places where fat limes alone are now found. Powdered silicate of potash in some sort becomes an agent for producing this hydraulic property, of which future experience will determine the value.

Artificial Stones.—Looking at the great affinity of lime for silica dissolved in potash, I was naturally led to examine the action of alkaline silicates on calcareous stones. Here I was still more fortunate, for the alkaline silicates became at once the means of a variety of applications of the highest utility. Let us look at what is said on this point in the 'Comptes Rendus' of the Society's meetings:—

'By mixing some powdered chalk in a solution of silicate of potash, a cement is obtained, which hardens slowly in the air, assuming a degree of stiffness, which, under certain circumstances, renders it applicable for the restoration of public monuments and the manufacture of moulded articles.

Chalk, whether in an artificial paste or in its natural state, plunged into a solution of silicate of potash, takes up, even when cold, a quantity of silica, which may be increased considerably by exposing the chalk alternately to the action of the siliceous solution and the air. The chalk assumes a smooth appearance, a compact grain, and a colour more or less yellow, according as it is more or less impregnated with iron.

Stone thus prepared is susceptible of a high polish. The hardness, which is at first but superficial, penetrates by degrees into the centre, even where there is considerable thickness. It appears capable of becoming of incontestable utility in the formation of works of sculpture, and ornaments of the most delicate workmanship; for when the silicifying process—"*silicatisation*"—has been effected on well-dried chalk, without which good results are not possible, the surface remains unalterable.

Some attempts made to render this stone applicable for lithography give promise of great success.

This method of converting soft limestone into siliceous limestone is likely to become a great acquisition in the art of building. Ornaments, unaffected by damp, and of great hardness, may thus be obtained at little cost; and, in many cases, a plaster made with a solution of silicate of potash will preserve from subsequent decay ancient monuments formed of soft limestone. This same plaster may become of general application in those countries where, as in Champagne, chalk forms almost the only building material.'

I have shown experimentally that one part of the silica from the silicate becomes separated by the action of the carbonic acid of the air, but that those parts of the silicate which have come into contact with a sufficient quantity of carbonate of lime pass into the state of silicate of lime. My work, presented to the Academy in 1841, pointed out numerous industrial purposes to which the impregnating of porous bodies of mineral substances might be applied, whether the objects operated upon were organic or inorganic. Considering these applications of the art as of the first importance in building, I have attempted to extend them, and I have just laid before the Academy a new series of observations.

Harmonizing the Shades of the Silicified Stone.—I have given the name of '*silicatisation*' to this remarkable conversion of soft and porous limestone into siliceous and compact limestone. As the operation of this process to articles of sculpture and building materials gives rise to a colouring very frequently so marked as to render the joinings more apparent and the veins more distinct, I have been compelled to seek a remedy for this objection.

There are two essential and general points to be met. Chalk walls are too white, while some kinds of ferruginous limestones are too sombre in their shades. To obviate this inconvenience, I perform the *silicatisation* of limestones which are too white with a double silicate of potash and magnesia. This is a vitreous substance, which forms a brown solution, and which when used in the process causes a little oxide of manganese to be deposited in the artificial siliceous paste. Oxide of cobalt, too, will combine, though in very small quantities, with silicate of potash. Silica precipitated by a current of carbonic acid is of a brilliant azure blue. This silicate may be used in the treatment of white marbles.

When the shades of the stone are too decided, and that is the most common defect, I obtain good results by mixing in the silicate solution a small quantity of artificial sulphate of barytes, which, in penetrating the porous stone, whilst it forms a layer of silica remains fixed, entering into a state of chemical combination. As regards the joints, they may be made with common cements, the shades of which may be rendered lighter by means of some white substances, but they may be still more entirely concealed with broken pieces of the stone itself mixed with silicate of potash, the whole being well pulverized previous to its use, and applied in a state of liquid paste.

WILD-COURT, DRURY-LANE.

IMPROVEMENT OF DWELLINGS.

At the close of last year we gave an account of a block of miserable dwellings forming Wild-court, Drury-lane, with a number of sketches to illustrate their appearance and condition.* We related how that the Society for Improving the Condition of the Labouring Classes had taken these premises on lease, and were about to fit them for healthful habitation. This has now been effected: the sum of 2,000*l.* has been expended upon the thirteen houses, under the direction of Mr. Henry Roberts and the superintendence of Mr. Baxendell: walls have been underpinned, hundreds of loads of decomposing filth removed, drainage, water-supply, and ventilation attended to, and a water-closet in an open gallery provided *for each floor*. Eighty-three families are occupying ninety-two of the rooms, at rents varying from 1s. 3d. per week per room to 3s. Those who take the apartments are obliged to subscribe to the following rules:—

No tenant can take lodgers, nor allow any soil or refuse to remain in front of the house. They must close the street-doors before dark every night; and no one will be allowed to remain in the lobbies or landings, or on the staircases at night. They must keep their rooms clean and well scrubbed, once a week at least. They must keep their windows clean, have their chimneys regularly swept, and deposit all dust and refuse in the shaft in the galleries for that purpose. The stairs and the landings must be scrubbed and washed down at least once a week; and the water-closets and galleries must be kept quite clean by the tenants in turn; while the tenants on the ground floors are to keep the lobbies and yards well cleaned and scrubbed; and the back cellar kitchens are to be kept properly cleaned up by the tenants when they have done their washing. The tenants are not to wash their clothes in their rooms, but in the back cellar kitchen, which is fitted up for the purpose, and to dry them as much as possible in the yards. There are also bye-laws, prohibiting the use of poles or cords for drying clothes out of window, the chopping of wood or breaking of coal or coke on the hearth, or driving of hooks or nails into the walls of their rooms, or pasting pictures against them. The ventilators are not to be covered over or stopped at any time. All slops and waste water must be thrown down the water-closets, and are not upon any account to be thrown through the attic windows into the gutters. Tenants who follow the markets must not keep their goods under their beds or in their bed-rooms; nor may rabbit-skins or hare-skins be kept in the rooms or hung out at the windows. No persons will be allowed to make their beds on the floor; nor will drunken and disorderly conduct be allowed, nor card-playing or gambling of any kind. The penalty for an infringement of any of these rules is *instant dismissal*; and it is expressly stipulated that free access shall at all times be given to the members of the committee, the secretary, the superintendent, or the workmen employed by them.

* Vol. XII. pp. 589 and 595.

PROVINCIAL NEWS.

Melbourn.—On Monday before last, the foundation-stone of a building now erecting here as boys' and girls' schools, for the trustees of the late Mr. John Trigg's charity, was laid by Miss Fordham, of Melbourn Bury. Mr. Nash is the architect, and Mr. Wm. French the builder.

Guilsborough.—On Wednesday in week before last, Holywell School, near Guilsborough, was inaugurated. The school is an oblong building, 30 feet by 16 feet, has a high-pitched open roof, the timbers stained and varnished: it is lighted by trefoil-headed lights, in groups of two, three, and five lights, with a trefoil in the south gable. Provision is made for a porch and cloak-room, but at present they are not built, owing to the want of funds. The south gable is surmounted by a metal cross. The building is erected of Guilsborough and Spratton stone, with Bath stone dressings. The floor is laid with Staffordshire quarries, and the roof covered with Staffordshire tiles. The school has been built after a design prepared by Mr. J. W. Hugall, of Cheltenham. The expense of the building has been defrayed by the patron of the living and his personal friends, and those of the incumbent, aided by the landed proprietors of the parish. Mr. Hart, of Leamington, was the contractor, and Mr. Richard Reeve, jun. clerk of the works.

Windsor.—Considerable improvement, says the *Windsor Express*, are being effected at Wentworth's Virginia Water, under the direction of Messrs. Cubitt and Co. Between seventy and eighty men are employed in making alterations which are expected to cost not less than 12,000*l.* This estate, it may be remembered, was purchased some time since for Cabrera, by his wife, formerly Miss Richards, now the Countess Morella.

Canterbury.—Messrs. Kirk and Parry, the contractors for the chapel-school to be erected at the rear of the Artillery Barracks, have commenced operations. The building is to be 105 feet in length, within the walls, with a depth of 57 feet, and is to be surrounded by a boundary-wall, surmounted with iron palisading. The style is Gothic, and the walls are to be built with Kentish rag-stone, with stone quoins. It is calculated for the accommodation of about 600 persons. The schoolmaster's residence is to be within the Artillery-gates, on the opposite side of the road to the spot selected for the school.

Bristol.—The local Society for the Improvement of Dwellings is about to commence immediate operations, having completed negotiations for the Old Queen Elizabeth's Hospital, Christmas-street, where they intend to erect a large number of dwellings, with all the latest sanitary improvements. The committee are also in treaty for other eligible sites.

Birmingham. — The Wesleyan Provident Assurance Society lately purchased a plot of freehold land in Moor-street, for the purpose of erecting thereon offices, board-room, &c. for their use, and the foundation-stone was laid on Wednesday in last week. The principal façade of the building is designed in the Renaissance style. It is divided into three bays, arched over, to receive the pediment and entablature. There is a balcony over the principal entrance. The whole will be executed in Portland cement. The building is from the designs of Mr. Samuel J. Smith, architect. Mr. Thomas Pashby is the builder. The cost will be 2,220*l.*

Wallasey. — The Works and Health Committee of the Wallasey Commissioners have reported that the tender of Messrs. Allen and Craven, for sewering the district comprised in contract No. 1, for 780*l.* was accepted; as also that of Mr. John Lane, for the sewerage of the district comprised in the contract No. 2, for 641*l.* 10s. The parish has been divided into three districts, Wallasey, Poulton, and Egremont, for drainage and other sanitary purposes.

Oldham.—The committee of the new market company, in Tommy Field, have accepted the contract of Mr. Walter Mahon, of Manchester, for the erection of the new market. The cost is estimated at between 3,000*l.* and 4,000*l.*; and it is intended that the market should, if possible, be opened about Christmas.

Durham.—On Wednesday before last, the Durham baths and washhouses were opened for the use of the public. The erection of the building has taken nearly two years, during which time various causes have prevented its earlier completion. The site is near Elvet-bridge. There are two swimming baths.

CHURCH-BUILDING NEWS.

Windsor.—It is proposed to erect a Chapel-of-ease to the mother Church of St. John, Egham, on or near Englefield-green, for the accommodation of the inhabitants who live in the Sand-pits, Bond-street, Blay's-lane, Bishopsgate, Middle-hill, and around Englefield-green. The cost of the church is estimated at about 4,000*l.*: this will include a small residence connected with it, as part of the provision for an additional curate. The subject has only been mooted, and already 700*l.* have been promised.

Akely.—On Tuesday before last the consecration of the newly-built Church at Akely was performed by the Bishop of Oxford. The church is a Gothic structure, with a tower and turret spire. A font has been presented by the incumbent's brother, the Rev. W. C. Risley, of Deddington. The church has been erected by Messrs. Franklin, of Deddington, from the designs of Mr. Tarring.

Canterbury.—The alterations and improvements in St. Paul's Church are now progressing in the hands of Messrs. Cozens and Lancefield, of this city. The works now in progress will add a third aisle, with a vestry on the south side, open to the church itself, and available for hearers when the other parts of the edifice are filled. Under this vestry the necessary apparatus will be erected for heating the church with hot air, on the principle now in use in St. Margaret's Church. The large old-fashioned pews will be succeeded by open, stained seats, and the dingy whitewashed ceiling give way to a modern panelled one. The outer walls are faced with flint, with Bath stone quoins and windows, in keeping with the other parts of the structure. The cost of the alterations will amount to about 2,000*l.* certain additional contingencies having arisen since the first estimate, such as the difficulty experienced in obtaining a good foundation for the south-west wall, two wells having been discovered in its line, and the apparatus for heating the building having been subsequently determined on. Of that sum, the vestry have resolved to borrow 800*l.* on the rates, thus leaving 1,200*l.* to be raised by voluntary subscription. The incumbent has already obtained about 600*l.* towards the amount required.

Drayton.—The church of this parish having been for many years in a dilapidated condition, some of the most influential and leading landowners have determined to put it in good order, which is now being done, under the superintendence of Mr. Maurice Davis, of Langport, architect.

Almondsbury. — The consecration of a new church at Cross Keys, near Northwick, in the parish of Almondsbury, was to take place on Wednesday last. This church, which has been raised by the exertions of the vicar, the Rev. Henry Gray, and at his own expense and that of his friends and relatives, will accommodate 700 persons. It is situate in a remote part near the Severn, four miles from the mother church. There is still a debt of 200*l.* due on the building. The architect of the new church was Mr. Crisp, son of the Rev. T. Crisp, principal of the Baptist College, Stokes'-croft.

Idridgehay.—On Thursday before last the new church at Idridgehay, the foundation-stone of which was laid on 22nd April, 1854, was consecrated by the Bishop of Lichfield. The edifice (which has been dedicated to St. James) has been designed with reference to the site, which is rather limited in area. It consists of a nave 39 feet long, 21 feet 4 in. wide, and 38 feet high to ridge of roof; a north aisle (separated from nave by two arches), 27 feet long, 14 feet wide, and 32 feet high to roof point; a chancel, 20 feet long, 16 feet wide, and 32 feet high; a tower, attached to the east end of aisle, the lower story of which forms the vestry, 9 feet square internally. There is a south porch, 9 feet long by 6 feet 6 inches wide. The style adopted by the architect is Gothic of the fourteenth century, and the whole of the walls, internally as well as externally, together with the doors, traceried windows and details, are all executed with a stone from Mr. Milnes's quarries, of a reddish grey colour. The roofs are all high-pitched, and the principals, as well as the other timbers, clean wrought and oil stained. The covering of the top is of Burlington slates. There is a reredos under the east window, of carved stone. The sittings are all open and roomy. The chancel is fitted with stalls on each side. The windows are all filled with plain glass, at present, in lead. The tower is surmounted by a broach spire, the extreme height being 94 feet. The porch is of stone, with open traceried timbers for the sides, front, and roof. The churchyard is surrounded by a wall, with ridged coping, and there are two entrances, with stone piers, gabled heads, and wrought-iron gates. The design of the architect, Mr. H. I. Stevens, has been carried out under the gratuitous superintendence of Mr. Parker. Messrs. Robinson and Co. are the builders. The church is fitted up with a heating apparatus, by Sylvester and Co. of London. The cost of the whole, according to the *Derbyshire Advertiser*, is about 2,000*l.*

Stockport.—On Wednesday before last the foundation-stone of a church, dedicated to St. Matthew, was laid, amid much rejoicing, in Edgeley, by Mr. W. T. Egerton, of Mere-hall, Knutsford, M.P. The ecclesiastical district of St. Matthew embraces the hamlets of Edgeley and Brinksway, and a small portion of Stockport proper. The style of the church is Transitional Geometric; the windows containing fully developed tracery, each member of the tracery springing out of the soffets of each other. The plan of the church consists of a nave with north and south porch, and fully developed chancel. The sacristy is on the north side, and at the western end of the nave is a tower and spire reaching an elevation of 165 feet, and surmounted by a floriated metal cross and weather vane. The nave will be pewed with open seats, and the chancel will be arranged for the clergy and singers, and with movable seats for the accommodation of Sunday-school children. There will be no galleries. The church is expected to be completed about September, 1856. The design is by Mr. J. S. Crowther, of Manchester, architect. Messrs. J. and J. Longson, of Stockport, are the contractors for the whole of the work, except the masonry, that having been taken by Mr. Haywood, of Alderley. The estimated cost will be about 4,000*l.* of which 1,400*l.* are still to be provided for. The church is intended to afford accommodation for about 600, one-half free.

Loversall.—The ceremony of laying the first stone of the new south aisle and nave of Loversall Church, took place on 27th July. The stone was laid by Mrs. Banks, of St. Katherine's. A considerable portion of the stone for this work, it seems, has been given by Mr. G. S. Foljambe, of Osberton. The architect is Mr. Scott, and the builder Mr. John Athron, of Doncaster.

Grimsby.—The Grimsby Cemetery was consecrated on Tuesday in week before last, by the Bishop of Lincoln.

Lincoln.—The new cemetery was consecrated on Tuesday week, so far as regards the Episcopalian chapel and ground. Though presenting a very different appearance, the chapels are the same in plan, viz. a parallelogram, thirty feet in length by sixteen in width, with robing-rooms attached, in which a fire-place is provided. The walls are eighteen inches thick, strengthened with double buttress at the angles, and are faced with red stock-bricks, with Ancaster stone dressings in the less exposed parts, and hard Yorkshire in the plinths, base, and stringcourses, weatherings, copings, &c. Each chapel is situated on a slightly-elevated terrace, approached by two steps. The walls, internally, are about fifteen feet high from floor to wall-plate, and finished in rough stucco. The woodwork of the roofs, the timbers of which are exposed and boarded over, is of fir, stained, and varnished, as are also the fittings. The windows are glazed with cathedral glass, in a plain margin; and the floors are laid to a pattern, with blue, red, and buff Staffordshire tiles. The west elevation of the Episcopalian chapel faces the visitor on entering the grounds. The style is decorated (1340). The western gable carries a bell turret, terminating in an ornamental metal cross, the top of which is 52 feet from the ground. The sum expended on each chapel was nearly the same. The style chosen for the Dissenters' chapel is the geometrical. The buttresses are capped with curved and weathered hoods, the apex of the gable terminating with a stone cross, an octagonal bell-turret being carried on the buttresses of the north-west angle in brickwork to the coping of the gable, and then terminating with a stone spire. The entrance-lodge and dead-house are also built of stock-brick and stone dressings. The dead-house is lighted and ventilated by dormer windows in the roof. The grounds are nearly equally divided between Churchmen and Dissenters. The whole is surrounded by a brick dwarf wall, stone coping, and iron palisade fencing, 8 feet high. The works were contracted for by Mr. Hollingworth, jun. of Grimsby. The sub-contractors were Mr. John Goddard, for the stonework; Mr. Thomas Enderby, for the brickwork; and Mr. West for the plumbing, glazing, &c., all of them residents in Grimsby; and Mr. Green, of Leeds, for the ironwork. Messrs. Maughan and Fowler are the architects who furnished the designs.

Brechin.—The foundation-stone of the East Free Church, Brechin, was laid on 23rd ult. by the Earl of Kintore. Amongst the visitors was Dr. Guthrie, a native of the ancient city of Brechin, who, in addressing those present said,—"I congratulate you on this building, which, from the plan, I see, is to be a very tasteful building. I put up, myself, in Edinburgh, a very pretty church, not so tasteful in the outside, however, as in the inside. It so happened that a lady came to me one day, and said, 'Oh! Mr. Guthrie, I am sorry to see you spend so much money upon the mere edifice.' Well, she had on a very magnificent silk gown, it was so gorgeous that it would have stood

itself. I most politely laid my hand on her gown, and said, 'How many Bibles would this dress buy, ma'am?' I think everything connected with the house of God should be respectable; and I will say, for the credit of the common people whom I love, that this is their feeling. What is the best dress they wear? It is that which they put on upon the Sunday. Which is the best bound book in the poor man's library? His Bible. I do think that everything connected with the Church of God should be superior? What remains of the grandeur of the Assyrian empire? What remains of the kingdom of Egypt? What remains of all the most celebrated of ancient nations?—their temples. I would serve God with the best of my time, with the best of my tongue, with the best of my heart. There is nothing deformed in God's creation. Go down to the nursery of my worthy friend Mr. Henderson there, and if you will produce an ugly flower in it, I will give up the whole concern." The architecture of this church is Middle Pointed. The area of the edifice is a simple parallelogram, the length twice the width, and the steeple in height three times the width. The principal entrance is by a tower porch, deeply recessed and richly moulded in the thickness of the walls. The church is from a design furnished by Messrs. Hay, of Liverpool.

ARCHITECTS' DRAWINGS: TO WHOM DO THEY BELONG?

As there appears to exist amongst professionals some incertitude on the question of property in plans, elevations, sections, and drawings,—that is, whether, on the completion of a building, they belong to the architect, or to the owners of new structures, I take the liberty of submitting the point for your opinion.

In order to render the question more distinct, we will suppose the case to stand thus,—the structure to have been completed, and the architect's fees or commission to have been paid.

"Architect."

*** Under ordinary circumstances, the drawings belong solely to the architect. He is employed to design and erect the structure, whatever it may be, with due regard to expenditure, and for that he is paid: the drawings are simply his means of proceeding.

ARCHITECTS' CHARGES.

JOHNS *v.* FREEDMAN.

In this case, tried at Cardiff, according to the statements made, Mr. J. W. Johns was an architect, formerly residing at Cardiff, but now carrying on his profession in London; and the defendant, Mr. Solomon Freedman, was a pawnbroker, residing in Bute-terrace, Cardiff. In April, 1854, the defendant engaged Mr. Johns to draw up plans and specifications for erecting three houses and a malthouse, and made various alterations in the plans from time to time. The plaintiff was also employed to negotiate a loan on mortgage of 600*l.*; but when the loan was offered, after considerable time had been occupied in effecting it, the defendant declined to accept it, because the mortgagee would not accept repayment by instalments of 20*l.* After having received the plans, the defendant resolved to build the houses without the plaintiff's assistance, and when the latter presented his bill for professional services, which amounted to 21*l.* the former refused to pay it.

Plaintiff said, in cross-examination, I supplied him with three plans and various pencil sketches. I have not made any specific charges for each drawing, but it is usual to charge 2½ per cent. on amount of contract. I have entries for twenty-four days on which I was consulted. I spent the most part of some of these days in consulting with small builders, as he was anxious to have it done very cheaply. He also consulted me on various other occasions about breaking agreements with different builders and contractors. I charged him much below my usual charges.

Mr. Thomas, architect, of Newport; Mr. Hartland, architect; and Mr. James, builder, supported the charge.

The counsel for the defence amused himself by abusing the plaintiff, and called the defendant, who said, I declined taking the plan, because it had no economy of ground. I found that I could myself design a plan by which a good deal of ground could be saved, and I employed no architect. I consider that five guineas is quite sufficient, and I have paid that sum into court.

Mr. Price, builder; Mr. D. Thomas, architect and builder; Mr. Bernard, the town surveyor; and Mr. Pritchard, architect, were examined on the part of the defendant.

The jury, after a brief consultation, returned a verdict for the plaintiff for the amount claimed, 21*l.*; and the foreman added, "We consider the amount charged very reasonable."

DOWNING-STREET IMPROVEMENTS.

The proposal of Government for taking down the present offices, and rebuilding them upon a large scale, appears to have had a check in the House of Commons. The grant is now confined to clearing a large plot of ground. The buildings are to be postponed until plans approved by Parliament are agreed upon. It is therefore to be hoped, that a fair competition for designs may be adopted, and that Sir Benjamin Hall will commence his reign by giving the profession a fair chance. By the proposal submitted to the House of Commons Committee, there appears but a very small plot appropriated to offices now planted out in various parts of town; and when it is known that 25,000*l.* are now paid for office rent, it surely is not too much to expect, that before accommodation for the entertainment of illustrious sovereigns is considered necessary, the enormous annual rental should be (if not altogether saved), at least, very greatly reduced. The observation of Lord Redesdale being so fully responded to by ministers in the House of Lords, let us hope, that this opportunity for an evidence of the skill and talent of the profession at large, will have its proper chance.

The necessity is now admitted on all sides, for not only rebuilding the present dangerous and dilapidated offices, but also for a great and comprehensive centralization; and if, instead of laying out 11,000*l.* in buying up the lease of Buckingham House, the present Ordnance-office had been sold, and accommodation in immediate connection with the War Department and Commander-in-Chief provided, an immense sum would have been realized in furtherance of a truly national structure. The estimated outlay is, or rather was, little short of 600,000*l.*; and when to that is added a sum necessary for the accommodation of all outlying departments, with their external structure, it is not too much to suppose an expenditure of three times the amount will be required. Surely this is a prize worth contending for, and one, from its position, that will not fail to enlist in competition the first talent of the country.

A. M.

COMPETITIONS.

Blandford Cemetery.—The designs of Mr. Wm. John Pinch, of London, for the chapels, and laying out the ground, have been selected.

Intended Cathedral at Lille.—The designs will not be required till March 1, 1856.

Newcastle-on-Tyne. — The design of Mr. W. Botterill, of Hull, has been selected in competition for the proposed new Orphan House Schools, Northumberland-street, Newcastle-on-Tyne.

Warwick.—We are informed that the premium of 10*l.* offered by Messrs. Roberts and H. Whittell, for the best design for laying out Copps'-yard, adjoining the Great Western Railway, for cottage residences, has been awarded to Mr. G. Punshon, assistant surveyor, of Leamington. These cottages are forty-five in number, and form a kind of square, in the centre of which there is to be a fountain, surrounded by shrubs and green sward.

THE ARCHITECTURAL MUSEUM.

It is intended to open a distinct list of subscriptions to the museum by artist workmen. They are to be entitled to all the benefits of the museum, as lectures, meetings, means of study, and reference. The annual subscription is to be five shillings per year, to commence from the 1st of January next. It is also intended to open the museum to art workmen on the Monday and Wednesday evenings in each week, as soon as arrangements can be made adequately for that purpose. These arrangements, it is hoped, will be completed by the first week in October. We may further mention, that the whole of Mr. Ruskin's valuable collection of casts from the Doge's Palace, Venice, and other places, is now in the museum, and in course of arrangement.

Notices of Books.

On the Smokeless Fire-place, Chimney-valves, and other Means, old and new, of obtaining healthful Warmth and Ventilation. By Neil Arnott, F.R.S. &c. London: Longman and Co. 1855.

Dr. Arnott, having retired from professional life, is devoting his leisure to those useful and important inventive studies to which he has for many years given his attention. The present volume is the first fruits of that leisure. The particular subjects of which it treats are,—the smokeless fire,—the ventilation of ordinary dwellings,—warming in general,—the new self-regulating stove,—ventilation on a large scale, by pumps, fan-wheels, shafts, &c.—ventilating and warming by transfer of heat from used air passing away to fresh air entering,—giving moisture to air,—gas-lighting in houses,—and apparatus for churches, schools, hospitals, ships, &c. There is also an appendix containing reprints of reports and papers on various cognate subjects. The design of the whole is to make intelligible to popular apprehension the scientific principles concerned in the successful execution of all such undertakings as those to which it refers, and so to remove many prejudices, obstacles, and difficulties, and to benefit society at large. The explanations given are clear and simple, so that any intelligent person may be able to understand not only the action but the purpose of, and the benefit to be derived from, the various inventions described.

One of the most important of these inventions is the smokeless fire-grate. Dr. Arnott does not claim the general principle of this invention as anything new. A modification of it was invented some thirty years since, and known as Cutler's fire-grate. But even Mr. Cutler was not the originator of the idea, as Benjamin Franklin realized the same principle by means of a simple cage of iron bars, hung on pivots, and the empty space left in which by the waste of fuel he filled, after opening the top, and then wheeled round so that the cold fuel was below, and the blazing remainder was then above it, and consumed the smoke arising from the fuel as it heated. In Dr. Arnott's modification of the invention, an iron coal-box is affixed to the grate below the usual bars, with a false bottom or piston. This box is filled in the morning with a day's supply of fuel; and after the fire in the grate or within the bars is lighted and wasted, the coal in the box is lifted or pushed up by the false or moveable bottom, acted on by a common poker, thrust into one or other of a series of holes, in a piston rod with ratchet catches. The bars are higher up from the hearth than usual, but not from any mere necessity in the nature of the invention itself, but from preference and on principle, as better adapted to warm the room, carpet, &c. than the ordinary low modern grate. Air is recommended to be supplied mainly from a tube opening in the hearth so as to obviate draughts in front of the fire-place; and for the saving of heat as well as for the better management of the draught, &c. the fire-grate is covered by a hood, of brick, or iron faced with slate, and narrowing to a neck, with a regulating-valve in it, and accompanied by a blower, which descends, so as, if required, to cover the whole or any part of the small open front space above the bars. This narrowing hood is regarded by Dr. Arnott as a necessary adjunct to the efficient action of his well-known ventilating-valve inserted into chimneys just below the ceilings of rooms. These valves have not been found to act well on all occasions, and it is but fair to note that the inventor attributes their want of proper action to the absence of this hood, and sometimes to the way in which the valve is made, with hinges inside in place of out, and so liable to be choked up, and thus to fail in their proper action.

Dr Arnott adduces several striking instances of the benefit derived by families from the insertion of his ventilating valve, and hence the clearing of bed-rooms, parlours, &c. from foul air; and he remarks that the healthful appearance of children in crowded Irish hovels, can in many cases only be attributed to the fact that foul air so freely escapes through the usual hole in the roof for the egress of smoke; while, on the contrary, the low modern grates are even an aggravation of the previous defects in the ventilation of town dwellings, and but too apt to destroy the health of both young and old.

The author has proposed that the president of the Board of Health for the time being should cause to be nominated a commission of a few men representing medical, chemical, and engineering science, and acquainted with the subject generally, to examine what has been done in regard to the ventilation and warming of dwellings, &c. and to report thereon, and recommend

such improvements as may be suggested and may meet their approbation.

In one important respect, Dr. Arnott's present work well merits the public patronage. His inventions are not appropriated to his own self-interest by patent or otherwise. He has made a free gift of them to the public, and is perfectly disinterested in his advocacy of what he regards as improvements, except, of course, in respect to the interest which every inventor cannot but feel in favour of his own inventions. But that the public, too, will have their interest in such inventions not a little increased by the present popular exposition of sanitary principles and practice, we have not the least doubt.

Architectural Publication Society. 14A, Great Marlborough-street.

Part I. of the volume of Illustrations to the Dictionary of Architecture for 1854-5, contains contributions by Mr. G. R. Clarke, Mr. Mocatta (the bath-room in the Palazzo Pitti, at Florence), Mr. Hirst, Mr. Lockyer, Mr. Hansard, Mr. Horace Jones, Mr. Shout, Mr. Walton, and Mr. T. H. Lewis. Part V. of the Dictionary (1853-4) is in progress. There ought to be many more subscribers to this society than there are, and then the work would go on much more rapidly.

VARIORUM.

The *Freemasons' Monthly Magazine* (Routledge; and Spencer), commends itself to the Brethren, and should have their aid. Antiquarian matters very properly find a place in it. Although well conducted, there is still room for that improvement which the Masonic body outside could and should by their assistance produce.——The *Art-Journal* of the present month, contains, amongst a number of good papers, an interesting collection of French criticisms on the works of English art in the Paris Exhibition. Although the notices are for the most part ill-natured, it is evident that the French critics have found more to admire in the works of our artists than they expected. Some of the notices are very acute and discriminative, and all are very readable, as French criticism generally is.

Miscellanea.

International Archæological Conferences will be held in Paris, on the 25th and 26th of the present month. The subjects to be discussed are interesting.

City of London Cemetery. — The landscape gardener, to whom the laying out is intrusted by the commissioner, as mentioned in a paragraph in our columns of July 28th, is Mr. Davidson, of Great Russell-street, Bedford-square. We observe in our advertising columns, that notice is given of the day fixed for receiving tenders for the supply of trees and shrubs.

School of Art at Dunfermline.—"A Tourist," writing us from Dunfermline, informs us that a very successful endeavour has at length been made to establish a school of science and art in that city. The classes, he remarks, are already self-supporting, although the school has not been established more than eighteen months,—a fact which speaks well for the master, Mr. Leonard Baker, who, it appears, is in connection with the Government department of science and art. The inhabitants have expressed their approbation of his exertions, by erecting, at considerable expense, a commodious school building, which, notwithstanding a little disproportion, our correspondent remarks, does credit to the town, and to the subscribers to its erection. The black board system of teaching at the public schools, which has done much toward the generalization of taste, appears not to be carried out as it ought to be at Dunfermline. Out of a much greater number of schools, there are only three, our correspondent is informed, receiving this instruction.

Royal Academy Hangers.—I wish you would call the attention of the governing body at the Royal Academy to the manner in which pictures for the Exhibition appear to be treated by those who hang them. I have just received my works from the Academy, and there is not one of them whose frame is not more or less injured; and in one case, a large nail has been driven right *through* the wooden frame (a new one). Of course, artists must expect a certain amount of legitimate wear and tear, but they have surely a right to be protected from wanton carelessness.

An Exhibitor.

Royal Polytechnic Institution.—A bar of the metal aluminium has been presented to this active institution, by the Emperor of the French, at the request of Mr. Pepper, the able manager, who has been lecturing on the subject to interested audiences. The bar, we believe, may be seen by any one who visits the Polytechnic. There appear to be still doubts as to the possibility of its cheap production, notwithstanding the inexhaustible abundance of its oxide, alumine, or common clay. Cannot Mr. Pepper decide this question for us himself? We are not aware that there is any mystery about M. St. Claire Deville's mode of evolving it from the oxide.

American Patents.—The following are from the June number of the Journal of the Franklin Institute of Pennsylvania:—For an Improvement in Cast-Iron Pavement; George Neilson, assignor to self, and Nehemiah Hunt, Boston, Massachusetts. Claim—Making a paving block with a perimeter of thirty faces, and formed by sixteen hexagons or hexagonal prisms, disposed with respect to one another, the same enabling such block, where it abuts against a contiguous block when laid in a pavement, to be supported laterally by a semi-hexagonal projection and recesses.——For an Improvement in Drills for Artesian Wells; J. Andrews, Winchester, Mass. Claim—The use of a stiff chain, for the purpose of operating a rock drill, or other artesian borer. Also, the device for rotating the drill, consisting essentially of the cog wheel and pinion, with the parts which set them in motion. ——For an Improvement in Furnaces for Burning Wet Fuel; Moses Thompson, Henrico County, Virginia. Claim—The combination, for the purposes of a high degree of heat, of bogasse, refuse tan, saw-dust, and other refuse substances, or very wet and green wood, by the employment of a series of five chambers, arranged, in any manner, to communicate with one flue, when any number of the said chambers are nearly closed to the flue, and to the admission of air, when first charged, while the remaining chamber or chambers are in free communication with the flue, and have a free supply of air admitted, and each chamber in its turn is nearly closed and then opened, and has air admitted, whereby the heat required is furnished by the combustion of the fuel in one or more chambers, while the fuel in the other chamber or chambers is being heated and decomposed to a desirable degree, no artificial blast being used.

A Cottager's Sun Dial.—Nail a round, thick, well-seasoned board, about eight or ten inches in diameter, level on the top of a post, so that water will not be inclined to run off one way more than another, and cover it with paint, zinc, tin, or lead, as you please. Then, with a pair of sharp-pointed compasses, draw a large circle nearly to the extent of the board, in the centre of which stick a common pin, and in the morning, when the sun throws the shadows of the pin's head just to touch the circle, make there a small mark; so, also, in the afternoon, when the shadow of the pin's head touches the same circle, make another mark, and from these two marks draw a straight line, and then another line perfectly square across it: this will be the true north and south of your dial. The next thing will be to find the shape of your gnomon. Divide the large circle (which represents the circumference of our globe of 360 degrees) into twelve equal parts, containing 30 degrees each; then set your sharp-pointed compasses so as to make thirty points in that space of 30 degrees. The next thing to be considered is the degree of north latitude, where the dial is to be placed; and with your compasses thus set, make just that number of points or spaces on the circle from the north, and from the last point or space draw a straight line to the centre of your circle, which will be the true slope of your gnomon. When fixed I should recommend you from twelve o'clock to mark out the hours by a well-regulated watch or timepiece, and your dial is complete.—*Worcester Herald.*

Boxes of Bricks.—For beginners in architecture, these scientific toys would be very useful, as machinery could readily make them to great nicety, including capitals of columns, mouldings, parts of arches, &c. If made of hard wood, a little stiff gum arabic and water would connect those parts requiring support, as arch-pieces. They could be readily broken asunder, and by merely wetting would join again. This is worth a thought at Marlborough House. My little boy has a bad box of bricks, and a few experiments with them convince me of the great value for school, and more advanced purposes, of the bricks. They can be made cheaply and yet accurately, can be put together rapidly, and while with a drawing we have to rub out, rule afresh, &c. &c. and only get a one-sided view of a building, with bricks we discover many points of view at once; and if the model falls down, a learner of quick thought discovers something. I am sure some of our architects would see the force of this if they had boxes of bricks of the right sort made, and tried their capabilities.—W. R.

Masters and Foremen.—*Clarke* v. *Earle*, v. *Dowson and Co.*—In the Southwark County Court, from the plaintiff's statement, it appeared that he had been engaged by the defendant as clerk of works, to superintend the erection of an extensive saw-mill. The firm at the same time wishing to carry out other works without the aid of a builder, instructed the plaintiff to employ men for that purpose, and by the desire of the defendant, men were employed at night as well as in the day: a portion of the work being in the Thames, could not be done otherwise than as tide-work, the extra time thus given by plaintiff, amounted, in thirteen months, to sixty-two days, according to the time paid to the workmen, and for which plaintiff had not made any charge during the progress of the works, in consequence, as he said, of a promise held out that any extra exertions would be rewarded. After thirteen months' labour, without any sign of a reward, plaintiff gave a month's notice, and left the firm, at the same time applying for the wages that he considered due to him. The defendant refusing to acknowledge the claim, or to make any compensation, a summons was taken out against him. It was admitted that it was not usual for foremen or clerks of works to charge for overtime, and the judge directed a nonsuit against the plaintiff.—A. B.

Tenders.—Builders have their singularities like other men, and among them is the not particularly rare one of giving tenders without any intention of abiding by them. I have observed this frequently in cases where the quantities are supplied, the idea, with men who have not a leading reputation, seeming to be, that by appearing in the lists with those who have such reputation, they gain an apparent standing in advance upon their real position, and no doubt the publication of the lists encourages this practice. It is easy to price the quantities so as to ensure the not getting the job, and then all goes right; but if it happens that one of these lesser builders be lowest, and the tender be accepted, he is obliged to decline carrying out the work, to the great inconvenience of the architect and his employer. Causes, besides that of inability, may sometimes arise for not carrying out the work of an accepted tender; and when they are reasonable, and are at once openly stated, the grievance must be borne, but the system above alluded to should be discouraged. The tenders reported in the *Builder*, for additions to the South Metropolitan Schools, are illustrations of these remarks, the lowest tender having been accepted, and the tenderers soon afterwards excusing themselves, on the ground of being too busy to execute the work, upon which it became necessary to apply to the next, who being of the capable sort, were willing to keep to their tender, and signed the contract; but it is not always that the dilemma is so easily overcome.—N.

Testimonials to Workmen.—It has often occurred to me (having much to do where bricklayers and their labourers are employed), that it would tend to raise the character of such men, and place the sober and well-disposed workman on vantage-ground, if their employers, generally, were to require some written testimonial from previous employers, as to the habits and conduct of workmen offering their services. At present, for example, the willing and sober bricklayer may have a drunken labourer, and, at a moment, when despatch may be required, the latter leaves his fellow-workman on some drunken spree, as it is termed, and thus compels the bricklayer to be idle and causes serious interruption to the works: and, *vice versâ*. I see no difficulty in the way of carrying out,—to some beneficial extent at least—an alteration in the present way of engaging workmen—not omitting groundmen or excavators.—A Builder's Clerk.

Inauguration of the Statue of Dalton, at Manchester.—On Thursday before last, the bronze statue of Dalton was inaugurated. The statue is of bronze, and executed by Mr. William Theed, R.A. It has been placed on an angle pedestal in the parapet wall separating the public esplanade from the grounds of the infirmary. The cost of the monument in the Ardwick cemetery was 125*l.*; about 4,137*l.* were appropriated to the Dalton Scholarships and Prize; and the bronze statue has cost about 900*l.* The statue is about 3 feet larger than the marble one by Chantrey in the Royal Institution. If, instead of being seated, the statue was upright, Chantrey's would be between 6 and 7 feet in height; Theed's full 10 feet high,—so that in scale it is heroic.

Street Decorations at Carlisle.—Mr. Clarke, of Gloucester, is said to have given satisfaction by the designs for arches, &c. with which Carlisle was decorated on the occasion of the meeting of the Royal Agricultural Society in that city. Amongst the chief decorations were three lofty arches, dedicated respectively to England, Scotland, and Ireland, and a Gothic arch of 60 feet in height, in Scotch-street. The materials were merely poles and strips of wood, evergreens and coloured calico, and the whole was got up in five days.

St. Peter's Church, Walworth.—The tenders for repairs here, under Mr. Jarvis, architect, ranged from 520*l.* to 199*l.*! Mr. Thornhill's tender' 284*l.* 19s. was accepted.

The Workmen at Shorncliffe.—We regret to hear that at the works at Shorncliffe for the reception of the foreign legion, the conduct of some of our workmen offers a very disparaging contrast with that of the foreign soldiers, of whose presence John Bull, true to his prejudices, was so apprehensive. Some of the former, we are told, have proved a plague and scandal to the neighbourhood: the latter are orderly, decorous, and even gentlemanly in their bearing. There are upwards of 1,500 already encamped there, and not a single complaint against any one of them has yet been brought before the authorities. They are chiefly from the northern parts of Europe—Fins, Swedes, Danes, Holsteiners, &c.

Accidents.—At Brentford, on Tuesday evening before last, a fatal accident occurred at the Royal Brewery, owing to the fall of a portion of a wall, enclosing a piece of waste ground. Outside the wall an alley runs down to the Thames, and of five or six children who were playing there, two were killed. A third was buried, but crawled out uninjured. The accident was caused by the fall of some recently-built arches which rested against the wall.——At Halifax, a portion of a wall, about 30 yards long and nearly 40 feet high, on the newly-erected shed of Messrs. Robert Crossley and Co. carpet manufacturers, Albion Mills, fell on Sunday morning before last. The loss cannot be much less, it is said, than 3,000*l.* A flood is blamed as the immediate cause of the accident.

Yorkshire Architectural Society.—A meeting of this society will be held in the Town-hall, Pontefract, on Tuesday, the 28th inst. at noon, when several papers will be read, including one on the Priory of St. Oswald, at Nostel, by the Rev. R. E. Batty, incumbent of Wragby; and another on Ackworth Church, by Mr. J. W. Hugull, architect. Previous to the meeting the members of the society will view the various objects of antiquarian interest in Pontefract, and after the meeting the church at Birkin. On the following day they will proceed to inspect the remains of the priory at Nostel, the churches of Wragby, Ackworth, Darrington, &c.

The projected Tunnel Railway in the British Channel.—Mr. Morris, the projector of a cast-iron tunnel railway from Dover to Calais, it appears, first proposed such a tunnel to cross the river Tamar, in Cornwall, so far back as 1841. His idea is, that by forming a cast-iron tunnel, the railway could be simply laid down on the surface of the Channel without any actual tunnelling, and he trusts to the cast-iron tunnel itself being strong enough, in such a position, in the midst of sea water, and at such a depth, to span any local ravine that might lie in the way. No diving, he remarks, would be necessary in the laying down of the tunnel, as he proposes to effect this by a method originating with himself. Stationary engines, he suggests, could be erected at every five miles apart, to propel by Clegg's system, if not by locomotive throughout. The leakage and ventilation, he adds, would be effected by motive power.

Tavistock-square.—Will you pardon my intruding upon the subject so well treated of lately—the interest of our squares. You mention Mr. Perry's house, which stands round the corner of Tavistock-square, between it and Burton-crescent. One point of interest you have omitted: next door to *the* novelist of the age (only second to him who will never be surpassed—Fielding), resides at present the accomplished author of "Ten Thousand a Year,"—a pleasing juxtaposition of kindred minds! Mr. P.'s house, by the way, is not what I remember it when a child—enclosed in its own walls, and with ever-open hall-door, and almost surrounded on three sides by a fine sunny ground. It is now four houses, by the remodelling and extending the old. And I am not quite certain but Mr. C. D. *does* occupy the *very* part once illustrated by the presence of our greatest Whig statesmen. I think an eminent solicitor, Mr. Curdale, is *its* occupier; but I will not *absolutely* affirm it. Mr. Perry's grounds at the back meet Mr. Baily's: in the latter house still resides the sister of an eminent brother, and herself, I think, not unaccomplished in the same elevated science. Close by, in Bedford-place, the learned and modest and esteemed scholar, Dr. Roget,* is still engaged in assisting to make the path more easy for future writers by a late work, in which he has stepped a little out of his ordinary path to facilitate the labours of those in every path. This being the locality, though not of my birth, yet of all my life beside, I could lengthen out this letter to an extent that would, perhaps, be tedious.—J. A. G.

*** The article in question did not pretend to mention all the eminent men *now* living in the squares.

* Nephew of Sir S. Romilly.

The Carvings in Bedminster New Church, Bristol.—This church remains unconsecrated. The bishop, without *directing* the removal of the sculptured screen at the east end of the chancel, requests "earnestly and affectionately" that it may be taken away. The churchwarden, on the part of those who gave the screen, declines to act, unless, by the bishop's "positive command." The bishop says in his letter,—

"The complainants refer to—first, 'a very prominent crucifix immediately above the place for the Communion Table;' secondly, 'a fantastic representation of our Lord's Nativity, with winged minstrels on the roof of the stable; groups of figures elaborately decked with the well-known appendages of Romish superstition, not excepting the symbol of the Papal supremacy;' and, thirdly, 'a Credence-table.' It appears that there is introduced into the chancel behind the Communion-table a richly-sculptured screen, called a *reredos*, representing in relief three great events in the Gospel history—the Nativity, the Crucifixion, and the Ascension. The figure of our Saviour upon the Cross, being in the centre of the middle compartment is of course prominent, but ought not to be confounded with the crucifix as it is used by Romanists, and was excluded from our churches at the Reformation. An image which is blended in an historical representation of our Lord's suffering seems unlikely ever to be regarded as an object of idolatrous worship. Upon the other parts of this screen, described to be a beautiful work of art, I shall not dwell. The complaint respecting the 'Emblem of the Papal Supremacy,' if it is intended to apply to the designation of St. Peter among the Apostles, by the keys, is unsubstantial, the evident reference being to a well-known passage in the Gospel narrative. The sculptured representation of the Heavenly Host at the Nativity, the omission of figures which we know to have been present in the real scene of the Crucifixion, and the insertion of a person, at the Ascension, in addition to the Eleven Apostles (supposed to be intended for the Virgin Mary), all prove that the artist considered himself entitled to exercise the common license of painters and poets, and to embellish historical representations from his own fancy. For this, among other reasons, I cannot admit the danger of these carved figures ever becoming objects of adoration. Being now called upon for my opinion, I must express an objection, on the score both of taste and propriety, to the introduction of the figures of the four Evangelists between the compartments of a representation which varies in any degree from the truth and simplicity of their narrative. Again, it must not be omitted as a material objection to the proposed decoration, that it occupies the space at the east end of the church, where it has been the general practice to place the Lord's Prayer, the Creed, and the Ten Commandments, the last of which are ordered by the Canons to be legibly exhibited in this part of the fabric. * * * It is scarcely worth naming the mistake respecting the Credence-table. There is no such piece of furniture: there is an aperture in the wall intended to serve as a shelf to deposit the elements before they are placed upon the Lord's Table; a provision of obvious convenience, and exposed to no objection which I can comprehend."

Railway Matters.—A Board of Trade report states, that during the year 1854, the expenditure of the Great Western, including the Shrewsbury and Birmingham, and the Shrewsbury and Chester, was 1,266*l.* per mile, and the receipts, 3,302*l.* per mile; London and North-Western, expenditure, 2,004*l.* receipts, 5,001*l.*; Oxford, Worcester, and Wolverhampton, expenditure, 240*l.* receipts, 1,741*l.* The total expenditure on these lines was as follows:—Great Western, 783,679*l.* exclusive of rent to Gloucester and Dean Forest, and Wycombe Railways; London and North-Western, 1,684,712*l.*; Oxford, Worcester, and Wolverhampton, 118,685*l.* exclusive of 2,537*l.* for the rent of Stratford and Moreton Railway.——The total amount received for traffic on the London and North-Western, for the week ending July 22, was 57,646*l.* (corresponding week in 1854, 59,855*l.*); Midland and Bristol and Birmingham, for same week, 28,276*l.* (corresponding week in 1854, 29,864*l.*); Great Western, 27,677*l.* (corresponding week in 1854, 24,800*l.*); Great Northern, week ending July 15, 19,622*l.* (corresponding week in 1854, 18,489*l.*)——The English railway revenue for week before last amounted to 411,117*l.* 10s. acquired on 7,165 miles, and equalling 57*l.* 7s. 6½d. per mile. For the corresponding period last year the income was 396,573*l.* on 7,053½ miles, or 56*l.* 4s. 4½d. per mile. The increase in favour of this year is thus 1*l.* 3s. 2½d. per mile.

Importance of Ventilation and Drainage: Seeds of a New and Deadly Disease.—A singular instance of evil resultant from contamination of the air of places ill ventilated and undrained has just occurred at Stephen's-mews, Rathbone-place, Oxford-street. A horse, belonging to one "Jemmy Massey, the well-known pugilist," had glanders—how originated is not stated; but the horse was kept in an undrained and ill-ventilated stable, over which Massey and his wife lived. The latter, *although she never had anything to do with her husband's horses*, was smitten with glanders; and after suffering all the horrors of this dreadful disease, has recently died of it in Middlesex Hospital. Had this poor woman been allowed to remain in the unwholesome locality where she was seized, those attending her might have also suffered, and in this way a new plague might have been introduced amongst human beings, in consequence of this single instance of the neglect of sanitary laws: and once established by a succession of victims, it is hard to say, in a populous district reeking with stagnant sewers and filthy streams, such as the metropolis is, where or when so horrible a visitation might have ended. How urgent such an instance ought to make one and all of us to force on the drainage question to a final and satisfactory issue! Here is an evil still more dreadful even than the virulent cholera and typhus, with which we now seem to stand in peril of being afflicted. Was it not thus the scarcely less loathsome and deadly small-pox originated amongst human beings? There was a time when it, too, was only a bestial evil. No sooner had it established itself as a human disease, however, than it was fostered in filth, close dwellings, and ill-drained towns, and at length became a scourge to the whole human race. God forbid that so strange and evil an omen as the occurrence of glanders in a human being without contagious communication with the beast afflicted with it, should be denotive of the like beginnings of a human plague ten-fold more loathsome even than small-pox. Nothing but thorough drainage and ventilation, it may be, can secure us against so terrible an affliction, now that it has shown itself capable of making so ominous a beginning, as a strictly human scourge, transmissible by mere infectious contamination of the atmosphere in foul localities.

Mechanical Inventions.—In the Commons, on Friday week, Mr. Ewart asked the Clerk of the Ordnance whether satisfactory progress continued to be made in the inventions laid before the select committee, with a view to shortening the duration of the war. Mr. Monsell, in reply, stated that 974 inventions had been laid before the committee, of which 696 had been rejected, and the remainder were under consideration: many of great importance were being carried into effect.

The Byzantine and Mediæval Courts.—On the principle "*palmam qui meruit ferat*," I cannot help expressing my regret that you should have published, in the last number of the *Builder*, without any corrective comment, a paper by Mr. R. P. Pullan "On Polychrome," by which the impression is produced (though I trust unintentionally) that the decorations of the Byzantine and Mediæval Courts were *designed* by Mr. Pullan; whereas, as you must be aware, the merit of that work is due to the talent and research of Mr. Digby Wyatt, from whose original sketches a large proportion of the decorations were carried out. I am certain that Mr. Wyatt (who is at this moment from England) fully appreciated and acknowledged the value of Mr. Pullan's assistance in this work, and I therefore regret the more that Mr. Pullan should have entirely omitted Mr. Wyatt's name in the paper alluded to. I trust you will correct the false impression produced, by a few words in your next number.—C. F. Jun.

TENDERS

For the Greenwich Cemetery. Mr. S. Hewett, architect. Quantities furnished:—

	Chapels and Lodge.	Oak Fences.
Aviss	£2,797 0 0	.....
Todd	2,107 0 0	.....
Rolfe	2,076 0 0	406 0 0
Maynard	.....	523 0 0
Newnham	.....	498 0 0
Marshall	.....	329 0 0

For Masonic Hall and Chambers, Newport, Monmouthshire. Mr. R. G. Thomas, Newport, Architect. Quantities furnished:—

Tames and Price (Cardiff)	£2,095 0 0
Toogood and Beckingham (Newport)	1,975 0 0
Norman (Newport)	1,875 0 0
William Williams (Newport)	1,810 0 0
H. P. Bolt (Newport) (accepted)	1,770 0 0
John Griffiths (Newport)	1,740 0 0

For building a house at Kingston, for Thomas Rolls Hoare, Esq. Mr. E. I'Anson, architect. Quantities supplied:—

Piper	£6,060 0 0
Lucas, Brothers	5,863 0 0
Ryder	5,373 0 0
J. and C. W. Todd	5,263 0 0
Notley	5,051 14 1
Burton, H.	4,863 0 0
Thompson	4,830 0 0

[Advertisement.]

Burglars Defeated.—Chubb's Gunpowder-proof Safes.

"9, Cousin-lane, Upper Thames-street, London, July 6, 1855.

"Gentlemen,—The safe you fixed here some years ago has indeed proved a good one, and done good service. Last week some thieves broke into our office, and tried their hands upon it. First they seem to have used their crowbars, and then gunpowder, but both proved vain; for money, bills, and deeds were all safe enough in your 'safe,' and under your lock and key. We have great pleasure in informing you of this, of which you can make any use you please. — We are, gentlemen, your obedient servants, — James Nicholson and Co.

"Messrs. Chubb and Son, 57, St. Paul's-churchyard."

Chubb and Son, 57, St. Paul's-churchyard, London; 28, Lord-street, Liverpool; 16, Market-street, Manchester; and Horsley-fields, Wolverhampton.